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The role of observed autonomy support, reciprocity, and need satisfaction in adolescent disclosure about friends

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ABSTRACT

Although research increasingly addresses the role of parenting in fostering adolescent disclosure, most research relied on self-report measures of parenting and did not address the role of autonomy support. In the present observational study (conducted in Belgium), with 62 mother-adolescent dyads (mean age mothers = 44 years; mean age adolescents = 14 years; 77% of adolescents female), we rated mothers' provision of autonomy support during a 10-minute conversation about friendships. We found that observed maternal autonomy support was related positively to adolescents' degree of and volitional reasons for disclosure about friends. These associations were mediated by observed non-verbal reciprocity during the conversation and by adolescent satisfaction of their needs for autonomy and relatedness. Mothers' autonomy-support and mother-adolescent reciprocity also predicted mothers' own psychological need satisfaction and conversation pleasure. The relevance of the findings for adolescent autonomy and disclosure are discussed.

'My child tells me so little!' At least some parents of adolescents express this complaint. Indeed, during adolescence children tend to keep more information for themselves (Keijsers, Frijns, Branje, & Meeus, 2009) and they use a variety of strategies to manage information to parents, including not only disclosure but also secrecy and lying (Smetana, 2008). Parents may differ in their approach towards fostering disclosure (Grolnick, Ryan, & Deci, 1991). Some parents may act "pushy" in their attempts to find out what is happening in their children's life. Yet, such a controlling approach might backfire, leading adolescents to share less parent-desired information. Other parents may behave more empathically, patiently respecting the adolescent's pace to talk about private issues. They may be sincerely interested in the few things their adolescents share, thereby creating a warm and reciprocal parent-child environment. In such an environment adolescents might feel understood and accepted, which may make them more willing to share information, even when parents dislike the information.

Disclosure is defined herein as disclosure of activities and whereabouts, which has been referred to as 'routine disclosure'. Such disclosure is distinct from disclosure of private thoughts and feelings, which has been referred to as 'self-disclosure' (Tilton-Weaver, Marshall, & Darling, 2014). Given that adolescent routine disclosure is a main source of parental knowledge about the child's whereabouts and is a consistent predictor of psychosocial adjustment (Kerr & Stattin, 2000; Kerr, Stattin, & Ozdemir, 2012), it is important to examine which factors promote or hinder adolescents in disclosing information to their parents. One line of research addressing the role of parents in adolescent routine disclosure has focused on the role of parenting practices such as parental solicitation and parental rule setting regarding adolescents' whereabouts. These practices appear to be rather weakly related to adolescents' general routine disclosure (e.g., Keijsers, Branje, VanderValk, & Meeus, 2010; Kerr, Stattin, & Burk, 2010). A second line of research focused on the role of parental warmth and responsiveness, which appears a more reliable predictor of adolescents'

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general routine disclosure (e.g., Salafia, Gondoli, & Grundy, 2009). In addition to responsiveness and direct parental attempts to regulate behavior, parental support for autonomy is considered a third important source of influence on adolescents' development (Joussemet, Landry, & Koestner, 2008). However, few studies have addressed the role of autonomy-supportive (as opposed to controlling) parenting in adolescent disclosure or disclosure about friends specifically. This is unfortunate because many scholars assume that autonomy-relevant developmental processes play a key role in adolescent disclosure (e.g., Darling, Cumsille, Caldwell, & Dowdy, 2006; Smetana, Metzger, Gettman, & Campione-Barr, 2006). As such, it seems important to examine whether and how parents' support for autonomy is related to adolescent disclosure.

Grounded in Self-Determination Theory (SDT; Deci & Ryan, 2000), the present study aimed to examine associations between observed maternal autonomy support (as rated during a 10-minute conversation between mothers and their children about friendships) and adolescents' degree of disclosure about friends as well as their reasons (i.e., volitional relative to pressured) for disclosure. In addition, we investigated possible explanatory mechanisms (i.e., reciprocity and psychological need satisfaction) underlying these associations. We focused on the topic of peer relations because it is a sensitive topic. Indeed, adolescents have been found to disclose less about their peers than about other topics (Smetana et al., 2006). According to social domain theory, this is because the domain of peer relationships is considered an area over which parents have little legitimate authority (Smetana et al., 2006). At the same time, peer friendships play a key role in adolescents' adjustment and problem behavior (e.g., Brown, Mounts, Lamborn, & Steinberg, 1993). In sum, fostering disclosure in this sensitive yet important domain represents a challenging task for parents.

1. Parental autonomy support and adolescent disclosure about friends

A central tenet of SDT involves the postulation of the psychological needs for autonomy, competence, and relatedness, the satisfaction of which is said to be critical to for well-being and social adjustment (Deci & Ryan, 2000). For children to flourish and develop optimally, they need to feel autonomous (i.e., experiencing a sense of volition and psychological freedom), related (i.e., experiencing a sense of connectedness and intimacy), and competent (i.e., experiencing efficacy to deal with tasks and activities) in their daily activities (Deci, Eghrari, Patrick, & Leone, 1994). Parents can contribute to satisfaction of these psychological needs by promoting an autonomy-supportive rather than controlling parenting style (Grolnick et al., 1991; Joussemet et al., 2008). In SDT, autonomy support is defined as the degree to which parents promote volitional functioning and self-endorsement in children (Soenens, Vansteenkiste, Van Petegem, Beyers, & Ryan, 2018; Soenens et al., 2007). To do so, autonomy-supportive parents try to relate to the child's frame of reference, allow meaningful choices when possible, encourage self-initiation, and provide a meaningful rationale for a request (Grolnick, Deci, & Ryan, 1997).

Autonomy-supportive parenting is contrasted with a controlling or pressuring approach, in which case parents pressure their children to think, act, or feel in accordance with the parental agenda and standards (Grolnick & Pomerantz, 2009; Grolnick et al., 1991; Joussemet et al., 2008). Controlling parenting can manifest in at least two different ways (Soenens & Vansteenkiste, 2010). Externally controlling parenting involves the use of external contingencies (e.g., threats of harsh punishment, taking away privileges, and controlling rewards) to pressure a child into compliance. Internally controlling parenting involves the use of tactics to pressure the child from within by appealing to feelings such as guilt, shame, and separation anxiety. The concept of internally controlling parenting is similar to the concept of parental psychological control, which involves intrusive parental strategies such as love withdrawal and guilt-induction (Barber, 1996).

Research has shown convincingly that autonomy-supportive, relative to controlling, parenting relates to diverse developmental outcomes, including better personal adjustment and well-being as well as better interpersonal functioning (as indexed by less relational aggression and more empathy; Grolnick & Pomerantz, 2009; Joussemet et al., 2008; Soenens & Vansteenkiste, 2010).

We reasoned that children growing up in an autonomy-supportive family climate would be more likely to disclose information about their activities and behavior with their friends because autonomy-supportive parents would respect the child's rhythm and pace in disclosing information rather than pushing them to do so. Also, when engaging in disclosure, autonomy-supportive parents would display an authentic interest and willingness to understand the child's perspective. Instead, children of controlling parents may experience their parents as intrusive and meddlesome or they may feel judged and evaluated when disclosing personal information. Ironically, such controlling practices may lead them to disclose less. A number of previous studies have provided support for this reasoning in other domains. For instance, Roth, Ron, and Benita (2009) found that perceived maternal autonomy support related positively to adolescents' disclosure about mistakes at school which, in turn, related to children's willingness and capacity to learn from these mistakes. Conversely, perceived psychologically controlling parenting in general (Soenens, Vansteenkiste, Luyckx, & Goossens, 2006) and more specific manifestations of psychological control such as the perceived use of love withdrawal (Roth et al., 2009) and privacy invasion (Hawk et al., 2012), were found to relate negatively to general measures of routine disclosure.

2. The importance of observed autonomy support

Most studies on parental autonomy support and adolescent disclosure have relied on self-reported measures of parental style. However, adolescent self-reports of parental behavior might be biased by adolescents' own functioning. Research indeed suggests that individuals' mood and behavior can affect their perception of parental behavior (e.g., Brewin, Andrews, & Gotlib, 1993). In the context of our research questions, an adolescent with a history of problem behavior (and subsequent secrecy) might be inclined to perceive a parent as controlling and autonomy-suppressing even when, in reality, the parent is not particularly controlling. Such biased self-reports of parenting might then artificially inflate the relation between parental autonomy support (versus control) and adolescent disclosure, in particular when adolescents also report themselves on their disclosure. This problem of shared method

variance can be circumvented to some extent by using an observational measure of parenting. Still, it should be acknowledged that observers can also introduce bias (De Los Reyes & Kazdin, 2005) and that a reliance on observational measures only may also contribute to shared method variance. Therefore, in this study we relied on a combination of observational measures and self-reported measures.

To the best of our knowledge, only a few studies made use of observations of parental autonomy support and control in the context of conversations between parents and adolescents. Mauras, Grolnick, and Friendly (2012) found that parents' observed use of autonomy support was related positively to adolescent engagement during their conversation about everyday issues and adolescents' desire for additional conversations. Further, Poulin, Nadeau, and Scaramella (2012) found observed intrusiveness, which is one specific facet of controlling parenting, to relate negatively to adolescent disclosure during a discussion between parents and early adolescents. Although informative, a drawback of these studies is that they made use of a single item to code parental style. In the present study we aimed to develop a multi-item coding system, which would allow us to examine the reliability of the coding system. Moreover, the inclusion of a broad spectrum of specific autonomy-supportive and controlling maternal behaviors may provide more exact insight into how autonomy support and control manifest during mother-child conversations regarding adolescents' friendships. These insights can then inform practical recommendations for parents.

3. Adolescents' reasons for disclosure

Measures of routine disclosure (e.g., Stattin & Kerr, 2000) have often focused on how much information adolescents disclose, thereby largely neglecting the question of whether the disclosure is voluntary or involuntary in nature. Hence, another aim of this study was to move beyond the degree of disclosure as an outcome by also taking into account adolescents' motives for disclosure. Based on focus group conversations about disclosing to parents under conditions of disagreement, Darling et al., 2006 identified a number of reasons for disclosure, including 'telling things because you feel you should do so' and 'telling things because you couldn't get away with it'. This bottom-up approach was complemented in the present study with a top down approach. Specifically, grounded in SDT (Deci & Ryan, 2000; Ryan & Connell, 1989) adolescents' reasons for disclosure were assumed to fall along a continuum, ranging from controlled (or pressured) to more autonomous (or volitional) reasons.

The most pressured reason for disclosing constitutes external regulation. In this case, adolescents disclose information to avoid punishment or to obtain parents' appreciation. The pressure to disclose may also come from within. Such internal pressure is labeled introjected regulation. In this case, adolescents disclose to avoid feeling guilty or being disloyal vis-à-vis their parents. Both regulations represent forms of controlled motivation because in both cases adolescents feel pressured to disclose information. With these two types of controlled motivation, adolescents tell about their activities and whereabouts to parents because they *have to*. In contrast, adolescents may also disclose for more volitional or autonomous reasons. With identified regulation, adolescents disclose because they personally think it is important to be honest and open, or because they value the parents' input regarding the disclosed information. With identification, adolescents' disclosure is autonomous (i.e., it is a personal choice), yet it is still extrinsically motivated because the disclosure is instrumental (for instance, to be honest) rather than purely driven by the inherent enjoyment of talking to parents. Only with intrinsic motivation do adolescents disclose because they find it interesting and enjoyable to share information with their parents. Intrinsic motivation is considered the prototype of autonomous motivation as adolescents feel highly volitional and authentic when they act upon their interests (Deci & Ryan, 2000; Vansteenkiste, Lens, & Deci, 2006). However, both in the case of identified regulation and intrinsic motivation, adolescents experience psychological freedom to disclose information. Rather than feeling pressured to disclose information, adolescents with these motives *want to* disclose to their parents. Accordingly, identified regulation and intrinsic motivation are considered instances of autonomous motivation.

We hypothesized that autonomy-supportive parenting would relate not only to more disclosure but also to more volitional (i.e., autonomous) rather than pressured (i.e., controlled) reasons for disclosure. That is, in an autonomy-supportive context, adolescents would disclose information because they want to rather than because they have to. Although abundant research has shown that autonomy-supportive parenting relates positively to children's autonomous (relative to controlled) functioning in life domains as diverse as school, sports, and peer relationships (Grolnick et al., 1997), to the best of our knowledge, no study to date has directly examined the associations between parental autonomy support and the reasons underlying adolescents' disclosure.

4. Reciprocity and psychological need satisfaction as intervening processes

Another novel aspect of the current investigation involved the examination of intervening processes in the association between observed parental autonomy support and its outcomes. On the basis of SDT, we propose two consecutive intervening processes, that is, observed reciprocity and psychological need satisfaction. First, observed reciprocity is an important behavioral indicator of interaction quality (Weinstein, Hodgins, & Ryan, 2010). It manifests in behavioral attunement between conversation partners through non-verbal behavior such as leaning towards each other, joint laughter and behavioral synchronicity. Such reciprocity is an important observable effect of autonomy support (La Guardia & Patrick, 2008). Indeed, Weinstein et al. (2010) showed that an experimental induction of autonomy in dyads of students who worked together on a number of tasks, led to more observed reciprocity. In turn, reciprocity was beneficial for their ultimate task performance and their positive affect during the task. Furthermore, other research has indicated that constructs of dyadic reciprocity, mutuality, and synchronicity are related to diverse positive socialization outcomes among children (e.g., Criss, Shaw, & Ingoldsby, 2003; Lindsey, Mize, & Pettit, 1997). On the basis of these findings, we hypothesize that observed autonomy-support is related to observed reciprocity during the parent-child conversation and that reciprocity, in turn, is related to positive outcomes (i.e., a higher degree of disclosure, more volitional reasons for disclosure, and more conversation

pleasure). Moreover, because autonomy support has been found to yield benefits not only for the receiver (i.e., the adolescent) but also for the provider (i.e., the mother) of autonomy support (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006), we reason that not only adolescents would gain from autonomy support through reciprocity, but that the mother will also benefit by enjoying the conversation more.

Second, we hypothesize that effects of observed autonomy support and subsequent reciprocity would be mediated by both conversation partners' psychological need satisfaction. Greater reciprocity signals that the parent and the child are well-attuned to each other during the conversation. During such well-attuned reciprocal conversations, both mothers and adolescents would feel that there is room and freedom to express themselves in the way they want (i.e., satisfaction of their need for autonomy) and they would feel a strong connection with their partner (i.e., satisfaction of their need for relatedness) (La Guardia & Patrick, 2008). Past research on interpersonal relationships has shown that need satisfaction relates positively to relationship satisfaction (e.g., Patrick, Knee, Canevello, & Lonsbary, 2007) and a willingness to rely on partners (e.g., Ryan, La Guardia, Solky-Butzel, Chirkov, & Kim, 2005). Such processes may apply not only to horizontal relationships, but also to more hierarchical relationships, including the parent-child relationship. Mauras et al. (2012), for instance, showed that need satisfaction experienced by adolescents during a mother-child conversation about everyday issues was related to a desire to have additional conversations with their mother. Therefore, we expected that experienced need satisfaction during the conversation would relate to positive outcomes, including the degree of and volitional reasons for disclosure among adolescents, and conversation pleasure as experienced by both partners.

5. The present study

This study is an observational study in which mothers and their adolescents were asked to have a 10-minute conversation about the adolescent's friendships. The conversation was videotaped and we coded the maternal autonomy-supportive and controlling practices using a detailed coding scheme. The development of such a coding scheme was a first aim of the present study as no reliable instrument was available in the literature. The primary aim was to test an integrated process model in which an observed autonomy-supportive versus controlling maternal style would relate positively to observed reciprocity. Reciprocity would, in turn, relate to more need satisfaction among both mothers and adolescents. We focused on the needs for autonomy and relatedness because past research has shown that both needs are highly relevant in the context of parent-adolescent interactions and conversations (e.g., Allen, Hauser, Bell, & O'Connor, 1994; Inguglia, Inguglia, Liga, Coco, & Cricchio, 2015; Kansky, Ruzek, & Allen, 2018). In comparison with these two needs, parents' support of adolescents' effectiveness (i.e., competence) seems relatively less relevant in the context of talking about friendships, in part because talking about friends, in itself, does not require very advanced skills. Finally, need satisfaction would predict positive outcomes, including conversation pleasure among both partners, a higher degree of adolescent disclosure, and more volitional (rather than pressured) reasons for disclosing. To examine the validity of our model in a conservative fashion, we controlled for baseline levels (assessed prior to the mother-child conversation) of adolescents' general level of disclosure and mother- and adolescent reported general autonomy support.

6. Method

6.1. Participants

Participants were 62 Belgian (Dutch-speaking) mothers and their adolescent daughter or son (all from European descent). Mother-adolescent couples were recruited through different channels, that is, via an announcement in a local newspaper (32%), via an invitation letter spread through the school of the adolescent (44%) or via other channels (e.g., a school newspaper and snowball sampling) (24%). Initially, 75 mother-adolescent couples were invited to the laboratory. Because 12 of them did not show up at the appointment (16%), 63 couples actually participated in the study. One mother-adolescent couple was excluded from the analysis because of their limited knowledge of the Dutch language.¹

Mothers were 44 ($SD = 3.46$; range 37–55) years old on average. Adolescents were 14 ($SD = 1.19$; range 12–16) years old on average, with a majority of them being female (77%). The majority of the mothers were highly educated, as 90% obtained a college or university degree. Most of the adolescents followed an academic track (i.e., 80%), whereas only 18% and 2% were attending the technical and vocational track, respectively. Seventy-three percent of the mothers were married or living together with the biological father of their child.

6.2. Procedure

The study was conducted by two researchers, who each met with 31 mother-adolescent couples. After being welcomed, participants were informed that the study focused on adolescent disclosure of personal information. We did not provide further information about the goals or hypotheses of the study to avoid that demand characteristics would affect the results. Mother-adolescent couples received an informed consent form stating that their conversation would be videotaped. None of the 62 couples denied participation. Next, mothers and adolescents were asked to fill out a questionnaire (including items tapping into demographic

¹ The data for this study were used also in another publication (Wuyts, Soenens, Vansteenkiste, Van Petegem, & Brenning, 2017). Both reports share only 1 variable from the dataset, that is, the rating of observed autonomy-supportive maternal style.

information and into routine disclosure and general maternal autonomy-support) and they did so in separate rooms. Adolescents stayed in the room where the dyads were welcomed and mothers were taken to a different room. The experimenter prepared the camera while the participants filled out the questionnaires. The experimenter then entered the mother's room first to collect her questionnaire and to provide instructions to the mother. Mothers were invited to have a 10-minute conversation regarding things that happened in the adolescent's friendships during the past two weeks. Specifically, we instructed mothers to talk about the friends of the adolescent, what they had done together during the last two weeks, and how the adolescent experienced these friendship activities. The study had an experimental design where half of the mothers received a more pressuring instruction emphasizing their responsibility as a parent to be informed about their child's ongoing friendship (i.e., the high pressure condition) and the other half of the mothers were instructed in a more supportive way (i.e., the low pressure condition). This manipulation did not have main effects on the variables included in this study. Therefore, for the purpose of the present study we collapsed the data across the two conditions.²

The experimenter then went to the adolescent's room and collected his/her questionnaire. Similar to the mothers, adolescents were instructed to have a 10-minute conversation with their mother about friendships. However, adolescents were not allocated to two different conditions and did not receive instructions with different styles. Next, the adolescent was taken to the mother's room. The experimenter showed a clock standing on the table and asked participants to ring a bell after 10 min. The dyads were then left alone and the experimenter re-entered when the bell rang (which was around 10 min for all dyads). After the conversation, the adolescent was again taken to a separate room. Mothers and adolescents filled out a brief questionnaire about experiences during the conversation. Finally, participants were debriefed about the purpose of the study and were invited to an information session regarding the results of the study. Excerpts from two transcripts of mother-adolescent conversations can be found in the [Supplemental Material](#).

6.3. Measures

Adolescents and mothers filled out questionnaires prior to and after the 10-minute conversation. We relied on well-validated Dutch versions of all questionnaires. All items were rated on a 5-point Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*) and all scale scores were computed by averaging across items. Descriptive statistics and internal consistencies can be found in [Table 2](#).

6.3.1. Adolescent general degree of routine disclosure prior to the conversation

To assess adolescents' general degree of disclosure prior to the conversation we used the 5-item Child Disclosure Scale developed by [Stattin and Kerr \(2000\)](#); e.g., “How often do you usually tell your mother about your friends?”).

6.3.2. General autonomy support prior to the conversation

To validate the coding scheme for the observed maternal behaviors, we administered to both adolescents and mothers a self-report scale tapping into maternal autonomy support relative to control. This scale, which has been used in many previous studies (e.g., [Soenens & Vansteenkiste, 2005](#)), includes 7 items from the Autonomy Support subscale of the Perceptions of Parents Scale (POPS; [Grolnick et al., 1991](#); e.g., “My mother allows me to decide things for myself.”) and the 8 (reverse-scored) items of the Psychological Control Scale – Youth Self Report ([Barber, 1996](#); e.g., “My mother will avoid looking at me when I have disappointed her.”). Mothers rated the items with respect to their own parenting and the items for the measure were revised to make them amenable to parent self-report (e.g., I allow my child to decide things for herself/himself).

6.3.3. Adolescent degree of disclosure about friends during the conversation

Following the conversation, adolescents were administered two items tapping into disclosure regarding their friendships from the Child Disclosure Scale from [Stattin and Kerr \(2000\)](#). For the purpose of the present study we adapted the formulation of these two items to tap into disclosure during the past conversation (e.g., “How much did you disclose about the activities with your friends during the past conversation?”). Both items were positively correlated ($r = .56, p < .001$) and were averaged to form a score of disclosure.

² The different instructions were delivered to mothers through a video message. In this message, a so-called parenting expert (who in reality was a confederate) instructed mothers to talk about their adolescent's friendships using either pressuring or more supportive language. Although we were initially interested to examine whether a contextual manipulation of pressure would affect mothers' communication style (as was observed for instance in [Grolnick et al., 2007](#); [Wuyts et al., 2017](#)), this manipulation did not work. Mothers in the two conditions did not differ [$F(1,59) = 1.69, p = .20$] in their responses to a set of manipulation check items directly tapping into experiences of pressure and choice after the instructions (e.g., “After the instructions, I felt like I had to talk about my son/daughter's friendships” and “After the instructions, I felt free to talk with my son/daughter about friendships”). Possibly, the manipulation did not affect mothers' feelings because it was delivered in a distal fashion, with an unknown person giving instructions through a video message. As such, it was easy for mothers to simply dismiss the message. Further testifying to the fact that the experimental manipulation did not affect mothers' and adolescents' behaviors and experiences, the manipulation did not have main effects on any of the variables included in this study (all F -statistics had p -values $> .05$). Even in the absence of such main effects, associations between the study variables may still have been different in the two conditions. Therefore, we directly compared the correlation matrices of all study variables between the two conditions. We did so through a multi-group comparison of two measurement models, with one model assuming that the correlation matrices were equal (i.e., the constrained model) and one model allowing the matrices to differ between the two groups (i.e., the unconstrained model). This analysis showed that there was no significant difference between the constrained and unconstrained models, $\chi^2(36) = 26.62; p = .87$, indicating that both correlation matrices did not differ. Together, these results indicate that it was justified to collapse data across the two conditions.

6.3.4. Adolescent volitional reasons for disclosure during the conversation

To measure adolescents' autonomous (volitional) and controlled (pressured) reasons for disclosure during the conversation, we adapted the Self-Regulation Questionnaire (SRQ; Ryan & Connell, 1989), a questionnaire tapping into motivation that can be applied across different contexts and domains. The questionnaire started with an item stem reading "During the past conversation, I disclosed information about my friendships to my mother because ...". Following this stem, adolescents were asked to rate items tapping into different reasons. Two types of controlled reasons were assessed, that is, external regulation (e.g. "... I felt forced to do so"; 5 items) and introjection (e.g. "... otherwise I would feel bad about myself"; 5 items). Similarly, two types of autonomous reasons were assessed, that is, identification (e.g. "... talking with my mother is something I personally value"; 5 items) and intrinsic reasons (e.g. "... I like to share things with my mother"; 5 items).

An initial version of this questionnaire (which included 6 items per scale) was validated in an independent pilot study with a sample of 9th-11th grade adolescents ($N = 208$). Factor analysis confirmed the theoretically expected 4-factor internal structure of this questionnaire. Further, associations with measures of parenting and adolescent problem behavior confirmed the external validity of this scale. The results of this pilot study can be obtained from the authors upon request.

Consistent with previous research (e.g., Ryan & Connell, 1989; Soenens & Vansteenkiste, 2005), we computed a Relative Autonomy Index (RAI) by assigning a weight to the self-regulation styles as a function of their position on the self-determination continuum (i.e., external, introjected, identified and intrinsic regulation are, respectively, assigned the weights of -2 , -1 , $+1$ and $+2$) and by summing these weighted scores (see also Sheldon, Osin, Gordeeva, Suchkov, & Sychev, 2017). Intrinsic motivation receives a stronger weight than identified regulation because it is considered the prototype of autonomous motivation, where people engage in activities for the sake of the inherent enjoyment and interest in the activity at hand (Deci & Ryan, 2000). With identified regulation, individuals' behavior is autonomous but still extrinsic because the behavior is enacted for an instrumental, yet personally endorsed, goal or value. Higher scores on the RAI indicate relatively more autonomous motivation and relatively less controlled motivation for disclosure. In other words, adolescents with higher scores indicate a higher tendency to disclose information because they want to rather than because they have to. In the remainder of this contribution we will refer to this measure as a score for volitional reasons for disclosure.

6.3.5. Conversation pleasure

Both mothers and adolescents reported how pleasurable and interesting they had experienced the conversation (e.g. "I would describe the conversation as ... interesting."). To do so, 6 items derived from the Positive Affect/Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) were administered (i.e., enjoyable, interesting, pleasurable, constructive, fascinating, open).

6.3.6. Psychological need satisfaction during the conversation

Both mothers and adolescents rated six items regarding satisfaction of their needs for autonomy (e.g. "During the conversation I felt pressured." – reversed scored) and relatedness (e.g. "During the conversation I felt a warm connection with my mother/my son/daughter"). These items were adapted from The Basic Need Satisfaction in Relationships Scale (La Guardia, Ryan, Couchman, & Deci, 2000). Higher scores on these scales reflect higher need satisfaction during the conversation.

6.3.7. Coding scheme for the behavioral observations

All conversations were videotaped and rated for observed maternal autonomy support and reciprocity during the interaction. One rater (i.e., the first author) scored all items of the coding scheme for all videotapes. A second rater independently scored a random sample involving 41 videotapes (i.e., 66%), so that inter-rater reliabilities could be estimated. The 10- minute conversation was broken down into five 2-minute intervals. We selected a 2-minute unit following Mauras et al. (2012). A two-minute base seemed appropriate to use in order to make the interval long enough to observe events of autonomy supportive behavior and reciprocity. At the same time, this interval was sufficiently short and allowed us to observe variation in these behaviors across the conversation period. Within these intervals every item tapping into autonomy support and observed reciprocity was rated on a scale ranging from 1 (*totally absent*) to 7 (*strongly present*).

6.3.8. Observed autonomy-supportive (versus controlling) style

In the present study, we aimed to develop a reliable, multi-item coding system to code observed maternal autonomy support during conversations regarding adolescents' friendships. The development of the instrument proceeded through different phases. In a first phase the authors watched 5 of the 62 videotapes together to get acquainted with the nature of the conversations. They then formulated an initial set of items reflecting autonomy support and control. Some of these items were taken and adapted from previously used rating systems in different life domains (Deci, Driver, Hotchkiss, Robbins, & Wilson, 1993; Grolnick, Price, Beiswenger, & Sauck, 2007; Mauras et al., 2012; Reeve & Jang, 2006), while other items were new and were informed by the viewing of the videotapes. All items were formulated with specific reference to the theme of parent-adolescent interaction in the context of adolescent disclosure. In a second phase, two raters actually coded the first five videotapes. On the basis of their experiences while coding, they highlighted a number of problems with some of the items (e.g., lack of clarity of the items, problems using the rating scale, and low frequency of occurrence of some of the behaviors). These problems were discussed with all authors and refinements to the coding scheme were made. Then, the remaining 57 videotapes were coded.

The final coding scheme consisted of 19 items, 9 of which tapped into autonomy-supportive behaviors and 10 of which tapped into controlling behaviors. An exploratory factor analysis using Principal Axis Factoring was performed on these items (which were first averaged across the 2-minute intervals). The scree-plot pointed to a one-factor solution, with an eigenvalue of 7.47. After

Table 1
Descriptive Statistics, Factor Loadings, and Operational Definition of the 17 Autonomy-Supportive (versus Controlling) Behaviors.

Parental behavior	Means (SD)	Factor loadings	Operational definition
Choice of conversation topic	2.99 (.87)	-.64	The degree to which the adolescent is allowed to choose the topics during the conversation.
Reflective listening	2.94 (.58)	-.62	Parental use of reflections where the parent reformulates the feelings, experiences, and thoughts of the adolescent and adds her own interpretation
Recognizing adolescent's emotional state	2.58 (.94)	-.47	Recognizing the emotional state of the adolescent by being aware of his/her feelings and trying to explore them together, rather than ignoring sensitive subjects and overlooking the adolescent's emotional expressions.
Asking experience questions	2.88 (.74)	-.37	Asking open-ended questions meant to explore the experiences of the adolescent more in depth rather than just probing superficial information.
Authentic interest	3.79 (.54)	-.49	Showing authentic interest by displaying attention for the experiences of the adolescent
Recapitulate disclosure	2.23 (.74)	-.49	Summarizing the adolescent's disclosure to better understand what the adolescent is saying.
Empathic understanding	2.99 (.69)	-.53	Parental perspective taking and identifying with the viewpoint of the adolescent.
Awaiting disclosure	2.63 (.84)	-.45	Allowing the adolescent to disclose at his/her own pace without immediately asking new questions when the conversations stops.
Closed questioning	1.87 (.76)	.75	Frequently asking closed questions pushing the adolescent to disclose information.
Using controlling language	1.07 (.14)	.38	Making use of should/have to statements
Commanding	1.15 (.27)	.83	Continuous questioning and commanding the adolescent to disclose information.
Unsolicited advising or lecturing	1.18 (.34)	.85	Giving long speeches on issues the adolescent discloses; providing advice when it is inappropriate or unwanted by the adolescent or insistent stating what the adolescent should or should not do.
Showing disappointment and guilt-induction	1.25 (.33)	.75	Showing disappointment on specific topics the adolescent discloses, using guilt-inductive techniques when being concerned or when disagreeing, or wanting to impose the parental agenda.
Criticizing and expressing disapproval	1.47 (.54)	.75	Criticizing the adolescent or expressing disapproval on specific topics the adolescent discloses
Interrupting	1.29 (.42)	.60	Interrupting the adolescent when he/she is talking
Intrusive questioning and showing mistrust	1.30 (.47)	.88	Soliciting adolescent disclosure by asking intrusive questions and by expressing doubt and distrust.
Predominant parental talking	1.58 (.66)	.71	Predomination of parental speech during the conversation in such a way the adolescent gets less room to disclose or the focus is relegated to the parent instead of the adolescent.

excluding two items with a low ($< .30$) loading, all items had a minimal loading of $.37$ and the factor solution explained 43.92% of the variance. All autonomy-supportive items yielded a negative loading, while all controlling items yielded a positive loading. [Table 1](#) provides the descriptive statistics and factor loadings of the solution obtained after omitting items that did not load well, along with operational definitions of each of the 17 final items. To create a composite score of observed autonomy-supportive (versus controlling) maternal practices we computed the mean score across all items (which were already averaged across segments), thereby reverse coding the controlling items. The inter-rater intra-class correlation of the total score was $.72$ ($p < .001$). To further examine the validity of this composite score we computed correlations with two separate items coding generally autonomy-supportive and generally controlling style in each interval. As expected, these two general items were correlated highly positively ($r = .70$, $p < .001$) and negatively ($r = -.84$, $p < .001$), respectively, with the composite score of observed autonomy support (versus control). Furthermore, we computed correlations with adolescents' and mothers' self-reported scores for general autonomy support (versus control), as assessed prior to the study. These correlations were significant for both maternal ($r = .30$, $p < .05$) and adolescent ($r = .33$, $p < .01$) reports.³

6.3.9. Observed reciprocity

To observe reciprocity we used a measure developed by [Weinstein et al. \(2010; Study 2\)](#). This measure has three items tapping into the frequency of leaning forward, behavioral synchronicity (e.g., mimicking each other's non-verbal behavior), and joint laughter. The inter-rater intra-class correlation was $.76$, $p < .001$. A total score for reciprocity was computed by taking the mean of the three items.

6.4. Plan of analysis

In a set of preliminary analyses, we first conducted a multivariate analysis of covariance (MANCOVA) to explore whether

³ When calculating separate scores for autonomy-supportive and controlling style, we observed that the correlation between both variables was highly negative ($r = -.64$, $p < .001$). We also computed associations between the separate scores for autonomy-support and control with the study variables and we formally tested whether the size of the associations differs between both variables. We found that the size of the correlations did not differ significantly for any of the study variables. Overall then, autonomy-support and control relate to the study variables in very similar (yet opposite) ways, which further justifies their aggregation in a composite score.

Table 2
Descriptive Statistics, Internal Consistencies, and Correlations between Observed and Self-reported Variables.

	1	2	3	4	5	6	7	8	9	10	11
Variables assessed before the conversation											
1. Routine disclosure											
2. Perceived autonomy-support (AR)	.42***										
3. Perceived autonomy-support (MR)	.05	.30***									
Variables assessed during and after the conversation											
4. Observed autonomy support (vs. control)	.10	.33***	.30***		.43***	-.01	.26*	.18	.23	.39***	.11
5. Observed reciprocity	.26*	.36***	.18	.48***		.12	.26*	.22	.17	.29*	.09
6. Psychological need satisfaction (AR)	.45***	.50***	.08	.10	.31*	.29*	.33**	.50***	.58***	.34**	.25*
7. Degree of disclosure about friends (AR)	.14	.19	-.03	.29*	.31*	.38**	.28*	.16	.28*	.22	-.16
8. Volitional reasons for disclosure (AR)	.46***	.55***	.17	.30*	.40**	.67***	.25	.42**	.37**	.33*	.24
9. Conversation pleasure (AR)	.16	.18	-.07	.21	.22	.58***	.31*	.42**	.31*	.28*	.26*
10. Psychological need satisfaction (MR)	.15	.42***	.17	.38**	.39**	.47***	.27*	.48***	.31*	.28*	.57***
11. Conversation pleasure (MR)	.18	.20	.10	.10	.18	.35**	-.11	.34**	.28*	.60***	.91
Cronbach's alpha	.74	.85	.63	.89	.72	.83	.71	.91	.86	.69	
M (SD)	3.96 (0.62)	3.70 (0.60)	3.70 (0.46)	4.98 (0.40)	4.24 (0.79)	3.91 (0.92)	3.80 (0.82)	6.01 (3.37)	3.64 (0.92)	4.18 (0.62)	3.99 (0.74)
S (SD)	-.64 (0.30)	-.39 (0.30)	-.42 (0.30)	-1.22 (0.30)	-1.07 (0.30)	-1.06 (0.30)	-0.66 (0.30)	-0.90 (0.30)	-0.59 (0.31)	-0.72 (0.31)	-0.73 (0.30)
K (SD)	0.25 (0.60)	-.54 (0.60)	1.25 (0.60)	-3.74 (0.60)	1.12 (0.60)	1.54 (0.60)	0.86 (0.60)	-0.12 (0.60)	0.26 (0.60)	0.17 (0.60)	0.84 (0.60)

Note. * $p < .05$ ** $p < .01$ *** $p < .001$; AR = adolescent report; MR = mother report; M = mean; SD = standard deviation; S = Skewness; K = Kurtosis. Correlations above the diagonal are partial correlations controlling for routine disclosure and adolescent –reported and mother-reported general autonomy –support.

background variables were associated with the study variables. Specifically, adolescent gender and family structure were entered as fixed variables while all other control variables (adolescent age, adolescent educational level, maternal age, maternal educational level, and number of children in the family) were entered as covariates. Further, we computed zero-order correlations and partial correlations (controlling for effects of routine disclosure and general autonomy) between the study variables.

Then, we tested our hypothesized model by performing path analysis with manifest variables using MPlus 7.00 software (Muthén & Muthén, 2012). To correct for non-normality in some of the variables (cf. Table 2), we used robust maximum likelihood estimation (Finney & DiStefano, 2008). The model contained a path from observed autonomy-supportive style to reciprocity, which was, in turn, related to both maternal and adolescent need satisfaction. Maternal need satisfaction was modeled as a predictor of mother-reported conversation pleasure. Adolescent need satisfaction was modeled as a predictor of adolescent-reported conversation pleasure, degree of disclosure, and volitional reasons for disclosure. Two variables in the model (need satisfaction and conversation pleasure) were measured in exactly the same way among mothers and adolescents. To take into account the dependency of the data with respect to these two variables, we allowed the mother and adolescent reports of both variables to be correlated (thereby controlling for their shared variance). Model fit was evaluated through the combined consideration of the comparative fit index (CFI), which should be .95 or higher, the root-mean-square error of approximation (RMSEA), which should be below .10, and the standardized root-mean-square residual (SRMR), which should be below .08 (Hu & Bentler, 1999; Marsh, Hau, & Wen, 2004). For each of the proposed pathways, we calculated point estimates as well as bias-corrected bootstrap confidence intervals (CI), through the use of 5000 bootstrapped samples. Further, we also used bootstrapping to test for indirect associations from observed autonomy support to mothers' and adolescents' conversation pleasure, degree of disclosure, and volitional reasons for disclosure (through reciprocity and need satisfaction), through the use of the MODEL INDIRECT command in MPlus (Cerin & MacKinnon, 2008; Hayes, 2013; Hayes & Scharkow, 2013).

Finally, to test our model in a more conservative way, we performed a supplementary analysis in which we controlled all associations in our model for baseline levels of adolescent disclosure and mother- and adolescent-reported general autonomy support (versus control). This was deemed important because previous research found that dispositional features of parent-adolescent communication are related to situational displays of these communication patterns (e.g., Cheung, Pomerantz, Wang, & Qu, 2016; Grolnick, Gurland, DeCoursey, & Jacob, 2002). Thus, to ascertain that the effects observed can be interpreted at the situational level, we controlled for baseline levels of the key variables. To do so, each variable in the model was regressed on the scores for the baseline measures. The resulting unstandardized residual scores can be interpreted as scores for the study variables controlled for the baseline measures. Then, we estimated the hypothesized model again with the residual scores.

7. Results

7.1. Preliminary analyses

The MANCOVA testing for the role of background variables indicated that none of the background variables were significantly associated with the study variables, adolescent gender (Wilks' Lambda = .70, $F(11, 40) = 1.59$, $p = .14$), adolescent age (Wilks' Lambda = .71, $F(11, 40) = 1.51$, $p = .17$), adolescent educational level (Wilks' Lambda = .91, $F(11, 40) = 0.36$, $p = .96$), maternal age (Wilks' Lambda = .77, $F(11, 40) = 1.10$, $p = .38$), maternal educational level (Wilks' Lambda = .79, $F(11, 40) = 0.98$, $p = .48$), family structure (Wilks' Lambda = .84, $F(11, 40) = 0.69$, $p = .74$), and number of children in the family (Wilks' Lambda = .72, $F(11, 40) = 1.41$, $p = .20$). Thus, no mean differences were found in the dependent variables according to the background variables.

Correlations between the variables can be found in Table 2. Observed maternal autonomy support was significantly correlated with observed reciprocity and with adolescent degree of and volitional reasons for disclosure. Further, observed autonomy support yielded a positive correlation with maternal need satisfaction, but not with adolescent need satisfaction. Observed reciprocity correlated positively with maternal and adolescent need satisfaction and adolescent degree of and volitional reasons for disclosure. Finally, need satisfaction was associated positively with mothers' and adolescents' conversation pleasure and adolescent degree of and volitional reasons for disclosure.

7.2. Primary analyses

Initial estimation of the hypothesized model yielded only a modest fit: $X^2(14) = 23.62$; $p = .05$, RMSEA = .11, SRMR = .08, CFI = .93. According to the modification indices, a direct path from observed autonomy support to adolescent reported volitional reasons for disclosure had to be added to obtain acceptable fit, $X^2(13) = 17.79$; $p = .17$, RMSEA = .08, SRMR = .07, CFI = .97. However, while this path was significant using standard significance testing, it was not significant when testing significance through bootstrapping confidence intervals. As such, this direct path should be interpreted with caution. The final model is depicted graphically in Fig. 1. Observed autonomy support was related positively to observed reciprocity, which, in turn, predicted higher need satisfaction in both mothers and adolescents. Whereas maternal need satisfaction was related positively to mother-reported conversation pleasure, adolescent need satisfaction was related positively to adolescent-reported conversation pleasure, degree of disclosure, and volitional reasons to disclose.

Then, we examined the indirect associations between observed autonomy support and the outcome variables through the intervening variables. The indirect association between autonomy support and maternal conversation pleasure was significant, $b = .11$, $p < .05$, 95% CI [.02, .21], as well as the association with adolescents' conversation pleasure, $b = .08$, $p < .05$, 95% CI [.01, .16].

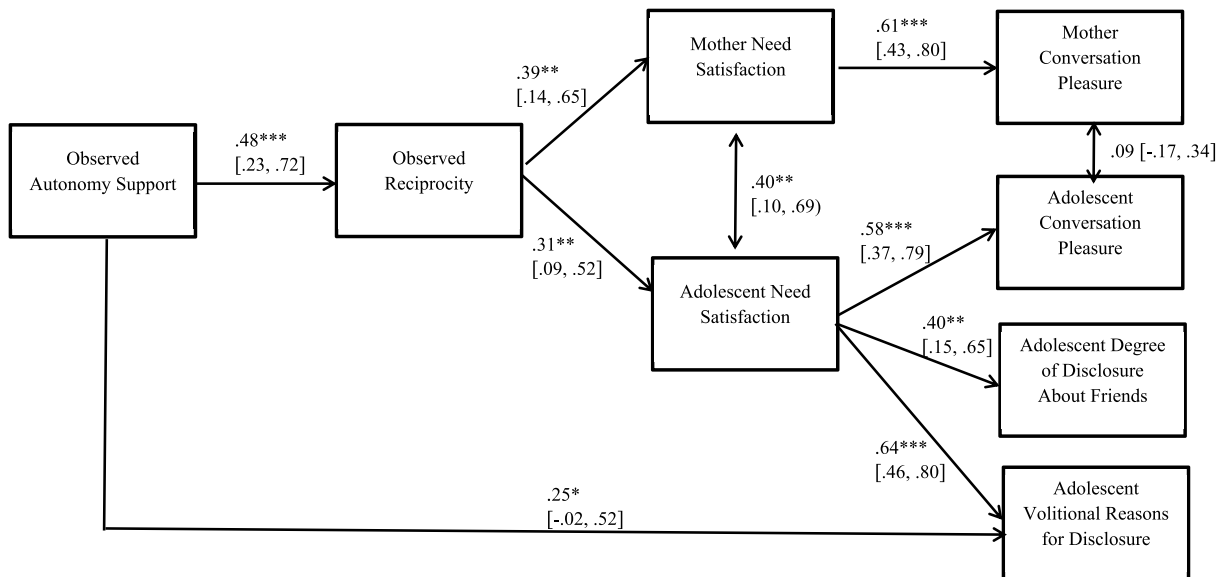


Fig. 1. The Structural Model With Standardized Parameter Estimates (and 95% Bootstrap Confidence Intervals) of the Relations Between Observed Maternal Autonomy Support (Versus Control), Observed Reciprocity, Maternal and Adolescent Reported Need Satisfaction, Maternal and Adolescent Reported Conversation Pleasure, and Adolescent Degree of and Volitional Reasons for Disclose About Friends. * $p < .05$. ** $p < .01$. *** $p < .001$.

The indirect relation with adolescents' degree of disclosure was not significant, $b = .06$, $p = .12$, 95% CI [-.02, .13], but the indirect association with volitional reasons for disclosure was significant, $b = .09$, $p < .05$, 95% CI [.02, .17]. In a final step, we checked whether our model could be improved by adding three direct paths. The model fit could not be improved by adding direct paths from observed autonomy support to maternal and adolescent need satisfaction, $\Delta\text{SBS-}\chi^2(2) = 5.41$; $p = .07$, nor by adding direct paths from observed autonomy support to the remaining outcomes, $\Delta\text{SBS-}\chi^2(3) = 7.06$; $p = .07$, or from observed reciprocity to the outcomes, $\Delta\text{SBS-}\chi^2(4) = 5.04$; $p = .28$.

Finally, when testing the model of Fig. 1 again, but thereby controlling for baseline levels of adolescent disclosure and mother- and adolescent-reported general autonomy support, we found that all paths shown in Fig. 1 remained significant, except for the path between observed reciprocity and adolescent need satisfaction, $b = .13$, $p = .22$. As a consequence, the indirect association between observed autonomy support and adolescent need satisfaction (through reciprocity) became non-significant, $b = .05$, $p = .27$. Overall, this analysis showed that the model generally held even when controlling for baseline levels of disclosure and autonomy-support. In other words, the associations of observed autonomy-support and reciprocity with the outcomes were specific to the situation (i.e., the conversation regarding friendships) and could not be accounted for by the adolescents' general tendency to disclose to parents or to mothers' general inclination to be autonomy-supportive.

8. Discussion

Given that adolescent disclosure is predictive of better psychosocial adjustment (e.g., Kerr & Stattin, 2000), it is important to determine which parenting climate encourages adolescents to disclose. In particular there is a need for research on disclosure about peer relations and friendships because such relations are important for adolescents' development (Brown et al., 1993). However, because the topic of peer relations and friendships is quite personal and sensitive (Smetana et al., 2006), it may be challenging for parents to engage in a constructive conversation about this topic.

To date, most research on the role of parents in adolescents' routine disclosure has focused on the role of parental monitoring and on the role of parental warmth (for a review see Kerr et al., 2012). Although it has been argued by many scholars that adolescents' autonomy and parental support for autonomy may also be important determinants of disclosure (e.g., Darling et al., 2006; Marshall, Tilton-Weaver, & Bosdet, 2005; Smetana et al., 2006), relatively few studies have examined whether parents' reliance on autonomy-supportive practices is related to adolescent disclosure. Also, the explanatory processes that can account for the association between autonomy-supportive parenting and disclosure have received little attention. The aim of the present study was to fill these lacunae, thereby making use of an observational measure of autonomy support in the context of mother-adolescent conversations about friendships.

8.1. Overview of the findings

As expected, we found that adolescents of mothers who were observed to provide relatively more autonomy support during a conversation regarding friendships were more likely to share information related to this topic. Interestingly, adolescents of mothers

who were observed to be autonomy-supportive not only disclosed more information regarding their friendships, they also did so more wholeheartedly (i.e., for volitional rather than pressured reasons). It seems that under autonomy-supportive circumstances adolescents open up, not so much because they have to (e.g., to please their mothers or to avoid feeling guilty), but because they truly want to. That is, they find it personally meaningful and enjoyable to share information with their mother regarding friends. Probably, received autonomy support contributes to more volitional disclosure because it indicates the mother's genuine interest in the child's perspective and her willingness to listen to the child in an unbiased fashion.

Several interrelated explanations or mechanisms can be put forward to explain the positive associations between autonomy support and both the degree of and volitional reasons for adolescents' disclosure. Consistent with Weinstein et al. (2010), convincing evidence was found for a link between maternal autonomy support and reciprocity in the mother-adolescent dyad. Whereas Weinstein et al. (2010) investigated this link in horizontal relationships (i.e., students working together), we demonstrated it for the first time in the more hierarchical mother-adolescent relationship. When mothers were more autonomy-supportive, the interaction was more synchronized and smooth, as manifested in non-verbal behaviors such as leaning towards each other, laughing together, and mirroring each other's behaviors.

Further, observed reciprocity was related to more psychological need satisfaction which, in turn was related to more adolescent disclosure and volitional disclosure. That is, to the extent that mothers were more autonomy-supportive during the conversation and that there was more reciprocity between adolescents and mothers, adolescents felt a stronger sense of connection to their mother (i.e., relatedness need satisfaction) and were better able to be themselves during the interaction (i.e. autonomy need satisfaction). When having these psychological needs met, adolescents not only shared more information with their mother, but also did so more willingly and rated the conversation as more pleasant. This experience of the conversation pleasure may set the stage to share more information in the future (Mauras et al., 2012). The current findings are consistent with research showing (a) that experiences of need satisfaction in close interpersonal relationships are essential to the quality of those relationships (La Guardia et al., 2000) and (b) that these experiences can explain how relationship partners' interpersonal style translates into the quality of the relationship (La Guardia & Patrick, 2008). Another potential mechanism that could be examined in future work is adolescents' perception of legitimacy, which has been established as a key concept in adolescent information management (Smetana et al., 2006). Possibly, greater levels of reciprocity and need satisfaction could help to explain why maternal autonomy-support relates to greater perceived legitimacy (Van Petegem et al., 2017).

It should be noted that the association between observed reciprocity and adolescent need satisfaction became non-significant when taking into account adolescents' general levels of disclosure and mothers' general levels of autonomy-support (as assessed prior to the observation). As such, the association between reciprocity and adolescent need satisfaction (as well as the intervening role of reciprocity in the association between observed autonomy-support and adolescent need satisfaction) should be interpreted with some caution. Apparently, the general quality of mother-adolescent interaction (as reflected in general disclosure and autonomy-support) cancelled out the effect of situational reciprocity on adolescent need satisfaction. However, because the sample size in the current study was relatively low, controlling for baseline measures of disclosure and autonomy support yielded a very conservative test of our hypotheses. A further examination of this association requires larger samples. Future research with larger samples would allow one to examine also the interplay between general quality of mother-adolescent interaction and situational (state-level) interaction quality. Possibly, adolescents and mother report the highest levels of need satisfaction when both the general and situational quality of interaction are high.

Interestingly, mothers also benefitted from giving autonomy support. Maternal provision of autonomy support and subsequent reciprocity were also related to more need satisfaction and conversation pleasure as experienced by the mothers. This result is consistent with Deci et al.'s (2006) finding that giving autonomy support to a friend is associated with more positive relational functioning and greater well-being among both the receiver and the provider of autonomy support. This finding is interesting because it suggests that, in an autonomy-supportive context, a positive spiral between mothers and children may develop.

Our findings may have a number of practical implications. Indeed, the development of an observational tool in the present study provided detailed insight into the specific manifestations of autonomy support in the context of mother-adolescent conversations about friendships. Among other things, autonomy support manifested as the provision of choice about the conversation topic, reflective listening, and empathic understanding, such that the parents could fully connect with the adolescents' frame of reference. Further, autonomy-supportive mothers refrained from adopting a controlling style, as manifested in intrusive questions, displays of mistrust, unsolicited advice, lecturing, and imposing their own point of view. The identification of these specific behaviors reflecting autonomy-supportive (versus controlling) parental practices is important for the formulation of practical recommendations for parents and family therapists. The coding system developed in this study can help to provide advice about what parents can do to foster disclosure when talking with their children and what kind of communication techniques are better avoided.

8.2. Limitations and directions for future research

The current research has some limitations, some of which are methodological in nature, some of which have to do with issues of generalization, and some of which deal with conceptualization. Methodologically, the cross-sectional design of this study did not allow us to examine reciprocal relations between the measured concepts. It is indeed very likely that mothers' and adolescents' behaviors and experiences influence each other in a reciprocal fashion. For instance, with non-disclosing adolescents parents may develop a sense of helplessness, thereby either giving up on their attempts to solicit information or soliciting information in a rather controlling way. Both responses may contribute further to adolescent secrecy. In this regard, it will be important for future research to also look into the nature of adolescents' disclosure. One useful approach to perform such a micro-process analysis is the state space

grade method, which involves a more intensive and dynamic coding and analysis of a dyad's trajectory in real time (Granic, 2005). Using this method, it becomes possible to identify important events in a dyadic interaction (e.g., an adolescent disclosing a serious misbehavior) and dyad members' subsequent response to these events. Such more advanced analyses allow for a more fine-grained and dynamic approach to the study of parent-adolescent interactions, thereby also providing more opportunities to demonstrate the reciprocal nature of such interactions.

Another methodological concern is that our instructions explicitly asked parents and adolescents to have a conversation about their friends. This type of instructions may have led to a higher degree of disclosure than typically observed in a natural conversation between parents and adolescents about friends. Also, with these instructions, adolescents' disclosure cannot be considered entirely spontaneous. Thus, future research would do well to instruct participants simply to talk about friends. Such instructions would allow for opportunities to be fully spontaneous in one's disclosure and may result in more variance in the degree to which adolescents disclose.

A number of measures used in this study could be strengthened in future research. In line with Weinstein et al. (2010), our measure of observed reciprocity dealt only with nonverbal aspects of coordination between mothers and adolescents, overlooking verbal expressions of agreement and attunement. Future research would do well to add such verbal expressions to the coding system to arrive at a more comprehensive measure of this construct. Further, our measure of need satisfaction consisted of items tapping into experiences of autonomy and relatedness need satisfaction and did not include items for competence need satisfaction. Because adolescents may differ in the extent to which they feel capable to effectively disclose information to parents (in particular when the information is sensitive in nature), future research could examine whether a measure of need satisfaction comprising the three needs (including competence) plays an even stronger intervening role in associations between parental style and dyadic partners' outcomes.

In terms of the generalization of our findings, it is important to note that this study focused on mothers only, thereby neglecting the potential role of fathers in adolescent disclosure. Further research is needed to examine whether paternal autonomy support in this context manifests differently than maternal autonomy support and whether paternal autonomy support is relevant for the same domains of disclosure. More generally, concerns might be raised about the selectivity of our sample and about the use of observational methods. With respect to our sample, it is important to note that the majority of participating mothers are highly educated and that most adolescents were female and following an academic track. With respect to the observational methods, it is important to note that we observed mother-child dyads only for a short period of time in the lab. Therefore, it remains unclear whether our findings generalize to the broader population of parents and adolescents and to more naturally occurring situations of parent-child interactions in real-life. Content-wise, future research would also do well to examine the generalization of findings across other life domains. One may wonder whether our findings would also apply in other, perhaps less sensitive, domains (e.g., moral or conventional issues). Future research could use a within-person design, thereby asking dyads to talk about different topics (e.g., Mauras et al., 2012).

Conceptually, recent research has demonstrated differences between adolescent disclosure and secrecy (Keijsers & Laird, 2010), with secrecy signaling more maladjustment and poorer parent-child relationships than a mere absence of disclosure. It would be interesting to examine whether autonomy support relates to both disclosure and secrecy.⁴

8.3. Conclusion

This study showed that when mothers were more autonomy-supportive (versus controlling) during a conversation with their children, their children were more likely to open up and disclose what is going on in their lives wholeheartedly. This appeared to be the case because when mothers were autonomy-supportive, the interaction was characterized by more reciprocity, thereby nurturing adolescent experiences of autonomy and relatedness. Mothers who provided autonomy support also reported more need satisfaction and conversational pleasure themselves. To the extent that further research confirms our findings, it is useful to pay attention to these dynamics in the counseling of families and in recommendations regarding communication style in the context of adolescent disclosure.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.adolescence.2018.03.012>.

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⁴ The study actually included a brief 3-item scale tapping into secrecy (e.g., “To what extent were you secretive about who your friends are during the conversation?”; Cronbach's alpha = .83). We inspected associations between the key study variables and this measure of secrecy during the conversation. Unlike the measure of disclosure, the measure of secrecy was largely unrelated to the study variables, with the exception of a negative correlation with motivation for disclosure. Adolescents with more volitional motives to disclose were less likely to be secretive during the conversation. These findings are in line with past research showing that disclosure and secrecy are distinct constructs, an observation confirmed further by the non-significant association between both measures in our study ($r = .06$; $p = .67$). These findings could be interpreted as meaning that autonomy-supportive maternal communication fosters some disclosure of new information, yet does not prevent adolescents from keeping secrets. The brief duration (10 min) of the observed conversation might play a role herein. Perhaps for adolescents to reveal any secrets they have, parents and adolescents would need to talk longer and find themselves in a less artificial setting.

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