Parental apologies and adolescents' information management strategies: Social learning and self-determination perspectives

Jean-Michel Robichaud [a,*], Julien S. Bureau [b], Grégoire Zimmermann [c], Geneviève A. Mageau [d], Karina Schumann [e], Hali Kil [f], Stijn Van Petegem [g]

[a] *Université de Moncton, Canada*
[b] *Université Laval, Canada*
[c] *Université Lausanne, Switzerland*
[d] *Université de Montréal, Canada*
[e] *Pittsburgh University, United States*
[f] *Simon Fraser University, Canada*
[g] *Université libre de Bruxelles, Belgium*

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ABSTRACT

Adolescents' willingness to share information with their parents about their life is related to their positive adjustment. As such, it is important to identify factors that lead adolescents to share this knowledge with parents. This study takes a step in this direction by examining the role of parental apologies following parental offenses, in relation to adolescents' usage of three main information management strategies: disclosure, lying, and secrecy. Using a sample of 288 mid-to-late adolescents, we assessed parental apologies and adolescents' information management strategies at three levels (global, situational, and hypothetical), using multiple methods (correlational and experimental). Overall, results suggest that parental apologies characterized by more need-supportive elements tend to be positively associated with adolescents' disclosure, whereas those characterized by more need-thwarting elements tend to be positively associated with adolescents' lying and, to some extent, secrecy.

As primary caregivers, parents are entrusted with the responsibility of safeguarding their adolescents' healthy development. This responsibility can be challenging to fulfill, however, as parents tend to experience various pressures that may hinder their ability to behave optimally towards their adolescents (Mabbe et al., 2018). As such, parent-adolescent relationships are bound to be marked by conflicts (often minor) and situations where parents, despite their best intentions, behave offensively or hurtfully towards their adolescents (Aunola et al., 2017).

Though common, such parenting mishaps are not without consequences. In fact, research shows that parental offensive behaviors (e.g., yelling, using harsh words) can have a range of detrimental effects on adolescents' development (Mabbe et al., 2016) and relationship with their parents (Van Petegem et al., 2015, 2017), especially when poorly managed (Moed et al., 2015). Of particular importance to the scope of this study, poorly managed parental offensive behaviors tend to be associated with adolescents' reluctance to share information with their parents in an open and transparent fashion (Baudat et al., 2022), which

in turn has been repeatedly linked to maladjustment and developmental difficulties (Abar et al., 2017). To prevent this potentially harmful state of distrust in their adolescents, parents need to effectively manage situations where they behave hurtfully towards their adolescents. In this study, we relied on social learning theory (Bandura, 1978) and self-determination theory (Ryan & Deci, 2017) to examine the role of parental apologies in adolescents' information management strategies.

Adolescents' Information Management Strategies

Adolescents may use different strategies to manage the information they share or avoid sharing with their parents, including disclosure, secrecy, and lying (Baudat, 2020; Baudat et al., 2022). Disclosure refers to the act of openly sharing information (e.g., about one's activities; Tilton-Weaver & Marshall, 2008). Secrecy refers to the act of hiding or intentionally withholding information (Frijns et al., 2010). Finally, lying refers to the deliberate act of sharing false or misleading information (Tilton-Weaver & Marshall, 2008). Thus, secrecy and lying are similar in

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that they both imply deception, but they are conceptually distinct in that the former is an act of omission whereas the latter is an act of commission. They are also conceptually distinct from disclosure in that a lack of disclosure does not inherently imply secrecy or lying.

Research suggests that parental knowledge regarding children's daily routines, academic tasks, social activities, and whereabouts can be difficult to obtain. This is especially true during adolescence, a developmental period where children (a) spend more time away from parental oversight (Lam et al., 2014), (b) request more independence and privacy from their parents (Smetana et al., 2006), and as a result, (c) increasingly manage the information they share with their parents (Keijsers & Poulin, 2013). Given that adolescents' willingness to share information is a primary source of parental knowledge and a relevant ingredient for well-adjusted parent-child relationships as well as more optimal adolescent development (Abar et al., 2017), it is important to identify factors that encourage adolescents to use more open and transparent information management strategies with their parents (i.e., to favor disclosure over secrecy and lying).

Parental Apologies

One factor that theoretically holds the potential to play a role in adolescents' information management strategies, but that has yet to be examined empirically, is parental apologies. Research on parental apologies is nascent but has nonetheless revealed promising benefits for the parent-adolescent relationship and for adolescents' development. In a first study, parents who reported apologizing more frequently to their adolescents after offending them tended to report a more securely attached relationship with their adolescents (Ruckstaetter et al., 2017). In two subsequent studies, different research groups found evidence for the importance of the phrasing parents use when they apologize to their adolescents (Lee et al., 2023; Robichaud et al., 2024). More specifically, building on work examining interpersonal apologies in other contexts (Blatz et al., 2009; Schumann, 2014), these researchers identified eight apology elements that focus on the victim needs (e.g., admitting one's wrongdoing, acknowledging the adolescent's harm) and contrasted them with five defensive ones (e.g., minimizing the consequences of their behavior, blaming the adolescent). Parental apologies characterized by more victim-centered elements or fewer defensive elements were associated with better parent-adolescent relationship outcomes (i.e., forgiveness, relationship satisfaction; Robichaud et al., 2024) and better developmental outcomes in adolescents (i.e., more prosocial behaviors, fewer externalizing and internalizing problems; Lee et al., 2023).

Overall, results from this emerging body of research identify parental apologies as a key conflict resolution strategy that parents may use to manage the common situations during which they offend or hurt their adolescents. However, research has yet to examine the relation between parental apologies and how adolescents manage the information they share with their parents.

Parental Apologies and Adolescents' Information Management Strategies

Based on social learning theory (Bandura, 1978), we propose that parental victim-centered and defensive apologies are likely to affect the strategies adolescents use to manage the information they share with their parents because such apologies model different ways of communicating (or avoid communicating) sensitive yet important information within the parent-adolescent relationship. Indeed, social learning theory posits that humans learn by observing their social network's behaviors, reflecting on those behaviors, and in turn imitating them (Bandura, 1978). Adolescents should thus be expected to learn how to manage the information they share with their parents in part based on how their parents share information with them (Kil et al., 2018). Applying this idea to parental apologies, one may argue that parents who include victim-centered apology elements following offenses (e.g., admitting

one's wrongdoing) model to their adolescents the importance of sharing about one's mistakes and taking responsibility for them, thereby teaching the value of disclosure for the benefit of the relationship. One may also argue that parents who offer such apologies model trust in the relationship, which should encourage adolescents' discosure (Smetana, 2010). In contrast, parents who include defensive elements in their apologies following their mishaps (e.g., justifications) may be teaching their adolescents to favor one's self-interest over the relationship, thereby potentially fostering secrecy and lying within the relationship. Adolescents may also perceive such apologies as less sincere, which may reduce their openness.

Research offers indirect evidence for these dynamics. For instance, the more adolescents are exposed to parenting behaviors that are theoretically adjacent to the victim-centered apology elements (e.g., perspective-taking behaviors) and the less they are exposed to parenting behaviors that are theoretically adjacent to the defensive ones (e.g., guilt-induction behaviors), the more they tend to value honesty and, in turn, use more open and transparent information management strategies with their parents (Baudat et al., 2022; Bureau & Mageau, 2014).

Based on self-determination theory (SDT; Ryan & Deci, 2017; Vansteenkiste et al., 2020), we also propose that parental apologies should impact adolescents' information management strategies with their parents because of their effects on adolescents' *basic psychological needs* for autonomy (i.e., the need to feel agentic over one's behaviors), relatedness (i.e., the need to feel connected to meaningful persons), and competence (i.e., the need to feel effective). According to SDT, parents who behave in ways that are more likely to satisfy adolescents' basic psychological needs (i.e., who adopt more need-supportive [NS] and fewer need-thwarting [NT] behaviors) create an interpersonal climate in which adolescents feel more trusting of their parents and in turn see the individual and relational benefits of disclosing to them (vs. lying and keeping secrets) as higher than their potential costs (Bureau & Mageau, 2014). SDT also posits the existence of a dual process model that comprises (a) a *bright* pathway in which NS behaviors strongly foster positive relational outcomes (including trust and disclosure), and (b) a *dark* pathway in which NT behaviors strongly foster negative relational outcomes (including distrust, lying, and secrecy; Vansteenkiste & Ryan, 2013). In coherence with SDT's claims, studies have shown that adolescents whose parents behave in more NS ways are more likely to disclose information to their parents (Mageau et al., 2017; Wuyts et al., 2018), whereas those whose parents behave in more NT ways are more likely to lie to their parents or keep secrets from them (Almas et al., 2011). It is worth noting that studies have also found negative correlations between NT and disclosure (Soenens et al., 2006) as well as between NS and lying or secrecy (Baudat et al., 2022).

Recently, Robichaud et al. (2024) proposed that the eight victim-centered and the five defensive apology elements should differentially affect the parent-adolescent relationship and adolescent outcomes because they respectively support and thwart adolescents' basic psychological needs. Based on this proposition and the documented links between parents' NS and NT behaviors and adolescents' information management strategies, it is likely that an association should exist between parents' tendency to offer apologies characterized by more NS (victim-centered) and fewer NT (defensive) elements and adolescents' inclination to manage the information they share with their parents in an open and transparent fashion. As previously mentioned, however, research has yet to examine this relation.

The Current Study

The goal of our study was thus to test the general hypothesis that parental apologies characterized by more NS and fewer NT elements would model healthy information management strategies within the parent-adolescent relationship and thus be associated with greater disclosure, less secrecy, and less lying in adolescents. We tested this hypothesis using three methods that were successfully employed in past

apology research (global assessments, Ruckstaetter et al., 2017; situational recall, Schumann, 2014; hypothetical vignettes, Kachanoff et al., 2017). At the global level, we examined whether adolescents' perceptions of their parents' general tendency to offer NS and NT apologies following offenses were associated with adolescents' general disclosure, lying, and secrecy behaviors with their parents. At the situational level, we examined how adolescents' reports of their parents' apologies following a specific situation were related to adolescents' disclosure, lying, and secrecy intentions towards their parents.

For both the global and situational levels of assessment, we expected NS elements to be associated with greater disclosure, less secrecy, and less lying in adolescents, with reverse associations for NT elements. In line with SDT's dual process model (Vansteenkiste and Ryan, 2013), we expected stronger associations between NS apology elements and adolescents' disclosure, as well as between NT apology elements and adolescents' lying and secrecy.

At the hypothetical level, we manipulated parental apologies by randomly assigning adolescents to four hypothetical parental apology responses that varied in terms of occurrence (i.e., apology vs. no apology) and content (i.e., NS and NT). We expected that responses solely containing NS elements would increase adolescents' intentions to use open and transparent information management strategies with their parents (i.e., greater disclosure paired with less lying and secrecy), compared to responses containing NT elements or no apology. We also expected that responses containing more NS elements would be appraised more favorably than those containing fewer NS elements.

Testing our main hypothesis at these three levels of assessment enabled us to verify the replicability of our findings across designs, hence balancing the strengths and limitations of each approach and providing a strong test of our hypothesis (Briesch et al., 2014). For instance, using experimental vignettes at the hypothetical level heightens internal validity (by controlling for confounding factors and assessing the directionality of our effects; Aguinis & Bradley, 2014), whereas asking adolescents to recall specific parental apology responses and information management strategies at the situational level enhances external validity (by reflecting more closely adolescents' actual interactions with their parents; Trafimow, 2023). In turn, asking adolescents to report on their experiences with their parents at the global level increases ecological validity (by verifying whether adolescents' *intentions* to use each information management strategy at the situational and hypothetical levels translate into corresponding *behaviors*; Holleman et al., 2020).

To adjust for potential confounds in our cross-sectional designs (i.e., at the global and situational levels), we adjusted for the frequency of parental offenses and for sociodemographics (i.e., adolescents' age and sex, as well as parents' gender and socioeconomic status). Further, in line with recent apology research (Robichaud et al., 2024), we aimed to offer a more nuanced account of the association between parental apologies and adolescents' information management strategies at all levels of assessment by considering the moderating role of the severity of parental offenses. Although many studies found no moderation of apologies by severity, those that have detected moderations suggest that any benefit of apologies tends to decrease in effectiveness as the severity of the offenses increases (Schumann & Dragotta, 2020). We thus expected similar patterns of moderation effects in our study.

Method

Participants

We recruited 288 mid-to-late adolescents in Canada living with their parents (13 to 21 years old, $M = 16.8$ years, $SD = 1.67$; 64.2% girls). Participating adolescents were part of a broader research on parenting and as such, they were also included in (Robichaud et al., 2024). Participants were French-speaking high school (81.6%) and college (18.4%) students. They identified as White (87.4%), Black (4.8%), Asian (3.9%),

Latino (2.6%), or as First Nation or Métis (1.3%). Adolescents' parents were married/common-law partners (70.6%) or separated (29.4%).

Adolescents completed our questionnaire-based online study while thinking about the parental figure "with whom they interact the most often" (referred to as the "target parent" hereafter). Some adolescents targeted their fathers (23.1%), though most targeted their mothers (75.9%) or a female relative (1.0%). Target parents' socioeconomic status was relatively high. Most had a university diploma (62.2%) or another post-secondary certification (11.4%). The remainder received a high school diploma (25.2%) or had not finished high school (1.2%). Regarding income, only 57.3% of adolescents knew their target parent's annual salary. Among those, most indicated an income over CAD$75000 (58.0%) or between CAD$50000 and CAD$75000 (18.2%). The remainder indicated an income between CAD$30000 and CAD$50000 (14.7%) or below CAD$30000 (9.1%).

Procedure

Following research ethics board approval, the first author and trained research assistants met with high school and college students in their classroom to present the study. To participate in the study, adolescents had to give their written consent. Parents of high school students also needed to read an information letter and sign a consent form. Participating high school students completed the study online in their classroom during a second visit, while college students completed it at the location of their choice. In all cases, data were collected confidentially.

Global Level

At the global level, adolescents reported on the general tendency of their target parent to provide NS and NT apology responses after offending them. They then rated their general tendency to (a) disclose information to, (b) keep secrets from, and (c) lie to their target parent. Finally, adolescents reported on the general frequency and severity of parental offenses.

Situational Level

At the situational level, adolescents were asked to "think about a situation they remember well and in which their target parent had a behavior towards them that was hurtful or that caused them an injustice." Adolescents described the offense, rated its severity, indicated whether they felt that their parent had apologized for it and then wrote down as best as they could remember what their parent had said to apologize or instead of apologizing. This in turn allowed us to code the presence of NS and NT apology elements. To obtain multiple sources of information on the described parental apology response, we also asked adolescents to rate the extent to which they perceived that their target parent used each NS and NT apology element. Finally, adolescents rated the degree to which the described parental apology response affected their intentions to use each information management strategy with their target parent.

Hypothetical Scenarios

For the hypothetical scenarios, adolescents continued to think about the parental offense they had recalled at the situational level. In line with other experimental studies on apologies (Schumann & Dragotta, 2020), we asked adolescents to "forget for a moment what their [target] parent said and did after hurting them or causing them an injustice (e.g., apology, lack of apology)" and to focus on one of four randomly assigned parental apology responses. In the first condition (basic apology), adolescents imagined that their target parent offered an apology characterized by one NS element (i.e., expressing remorse) by saying: "I apologize for what I did." In the second condition (NS apology), the

parent added three NS apology elements to the basic apology response. In the third condition (NT apology), the parent added three NT apology elements to the basic apology response. In the fourth condition (no apology), adolescents imagined that their parent did not apologize (see Table 1 for the English translation of the four apology responses). Adolescents indicated the extent to which they believed that receiving their assigned response would affect their intentions to use each information management strategy with their parent.

To enhance the likelihood that any difference (or lack thereof) between the NS and the NT conditions would be attributable to their NS and NT content, we ensured that both NS and NT apology responses were similar in terms of number of apology elements added to the basic apology response (i.e., 3), words (i.e., 34), and characters (i.e., 185). We also statistically controlled for potential spillover effects related to the recalled parental apology response at the situational level (see Plan of Analyses). Finally, we verified the success of our manipulation by asking adolescents to rate the degree to which their assigned parental response was an apology. At all levels of assessment, adolescents answered questions using 7-point scales.

Measures

Global Level

General Parental Apologies. To measure target parents' general apology tendencies, we asked adolescents to fill out the *Parental Apology Quality Scale* (PAQS; Robichaud et al., 2024). This 13-item scale requires adolescents to read apology elements outlined in prior research and to rate the extent to which they agree that each element "corresponds to the way their target parent speaks to them after hurting them or causing them an injustice." In total, adolescents read eight NS elements (e.g., "Acknowledges that their behavior was hurtful or unfair"; α = 0.94) and five NT elements (e.g., "Blames me for their behavior"; α = 0.90). This scale has adequate factorial structure and is related to indicators of NS and NT parenting (Robichaud et al., 2024).

General Information Management Strategies. To assess adolescents' information management strategies towards their parents, we replicated the procedure developed in recent research on the topic (Baudat et al., 2020). We thus evaluated three information management strategies that adolescents generally use with their parents (i.e., lying, secrecy, and disclosure).

Lying Tendencies. We assessed adolescents' tendency to lie to their target parent using an adapted version of Engels et al. (2006)'s *Lying Scale*. This 12-item scale measures three components of adolescents' lying behaviors towards their target parent, namely (1) outright lies (e.g., "I lie to my target parent about the things I do"), (2) exaggerations (e.g., "I exaggerate the things I experience when I talk to my target parent"), and (3) subtle lies (e.g., "I tell white lies to my parents"). We created our score of general lying tendencies by averaging all items (α = 0.88).

Secrecy Tendencies. We measured adolescents' secrecy tendencies using the secrecy subscale of the *Child Disclosure Scale* (Frijns et al., 2010). This 2-item subscale assesses the extent to which adolescents hide things from their target parent (e.g., "I keep secrets from my target parent about my free time"; r = 0.58, p < .001).

Disclosure Tendencies. We assessed adolescents' disclosure

tendencies using the disclosure subscale of the *Child Disclosure Scale* (Frijns et al., 2010). This 3-item subscale measures the degree to which adolescents reveal information to their target parent about themselves (e.g., "Usually, I talk about what happens in school to my target parent [ex: my relationships with teachers, how I am doing in my different classes, etc.]"; α = 0.75).

Parental Offense Frequency and Severity. To control for target parental offenses, we assessed their general frequency and severity. Based on Shnabel and Nadler (2008)'s procedure, we first asked adolescents to report on the frequency of offenses by indicating "how frequently their target parent behaves in a way that is hurtful to them or that causes them an injustice." Adolescents then reported on the severity of these offenses by rating the extent to which they make them feel (1) hurt, (2), victim of an injustice, (3) disrespected, and (4) upset (α = 0.89).

Sociodemographics. Finally, adolescents reported on their age, their sex as well as on their target parent's gender, level of education, and annual income. To create a covariate of parental socioeconomic status (SES), we averaged the standardized scores of parents' level of education and annual income.

Situational Level

Coded Parental Apologies. At the situational level, we coded parental apologies using adolescents' descriptions of their target parent's response following the recalled offense. Based on the PAQS, a trained research assistant coded whether each NS and NT apology element was present or absent in the described parental apology responses. Elements received a score of 0 if they were absent and a score of 1 if they were present. Using these dichotomous scores, we then created NS and NT ratio scores (e.g., where a NS ratio score of 0.5 implies that 50% of all potential NS apology elements were present). Examining the psychometric properties of our coding system revealed satisfactory interrater reliability for both subscales (*ICC NS* = 0.86; *ICC NT* = 0.74) and significant associations with adolescents' perceptions of the apology elements included in the described parental apology response (see Table 2). However, out of the 288 responses, 77 could not be coded because participants had not answered (n = 50), answered that they did not remember what their target parent had said (n = 15), or answered inadequately (n = 12; e.g., unreadable answer).

Perceived Parental Apologies. Participants also completed the PAQS while thinking about the apology response they wrote for the coded description. Reliability coefficients were once again satisfactory for the NS (α = 0.94) and the NT (α = 0.88) subscales.

Information Management Strategies. To examine the situational role of parental apologies in adolescents' information management strategies, we asked adolescents to indicate the extent to which the way their target parent behaved towards them after having hurt them or caused them an injustice led them to want to (a) "lie to", (b) "keep secrets or hide things from", and (c) "confide in" their target parent in the future. These three items are respectively meant to assess adolescents' lying, secrecy, and disclosure intentions.

Parental Offense Severity. At the situational level, we measured the severity of the described parental offense. Adolescents completed the same offense severity 4-item scale as at the global level, but this time while thinking about the described parental offense (α = 0.90).

Table 1
Manipulated Parental Apology Responses.
Context: Your target parent has the opportunity to apologize…

Condition	Parental apology response
Basic apology	…and says: "I apologize for what I did"
NS apology	…and says: "I apologize for what I did. It was wrong. I should have behaved better. I'll make efforts to ensure that this does not happen again in the future"
NT apology	…and says: "I apologize for what I did, but it was not that bad and I had good reasons to do it. You know, these things can happen in a relationship."
No apology	…but says nothing to you

Note. NS = Need-supportive. NT = Need-thwarting.

Table 2

Mean (M), Standard Deviations (SD), and Correlations Among the Main Variables of Interest at All Levels of Assessment.

	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. General NS apology elements	4.18 (1.63)																	
2. General NT apology elements	3.13 (1.59)	-0.35*																
3. General lying tendencies	2.94 (1.14)	−0.23*	0.36*															
4. General secrecy tendencies	3.04 (1.59)	−0.19*	0.20*	0.66*														
5. General disclosure tendencies	5.22 (1.39)	0.34*	−0.26*	−0.38*	−0.38*													
6. General offense severity	3.27 (1.60)	−0.31*	0.41*	0.20*	0.07	−0.12												
7. General offense frequency	2.52 (1.43)	−0.48*	0.51*	0.35*	0.24*	−0.35*	0.58*											
8. Situational NS apology elements	4.08 (1.70)	0.72*	−0.40*	−0.22*	−0.18*	0.38*	−0.32*	−0.50*										
9. Situational NT apology elements	2.92 (1.57)	−0.34*	0.77*	0.37*	0.24*	−0.23*	0.41*	0.38*	−0.32*									
10. Coded NS apology elements	0.13 (0.15)	0.45*	−0.26*	−0.17*	−0.16*	0.24*	−0.11	−0.26*	0.61*	−0.29*								
11. Coded NT apology elements	0.15 (0.13)	−0.27*	0.31*	0.16*	0.09	−0.06	0.33*	0.29*	−0.34*	0.34*	−0.44*							
12. Situational lying intentions	3.03 (1.85)	−0.37*	0.48*	0.57*	0.43*	−0.31*	0.30*	0.37*	−0.32*	0.51*	−0.14	0.19*						
13. Situational secrecy intentions	3.29 (1.95)	−0.36*	0.48*	0.53*	0.39*	−0.37*	0.28*	0.39*	−0.34*	0.50*	−0.16*	0.17*	0.81*					
14. Situational disclosure intentions	3.96 (1.96)	0.48*	−0.37*	−0.26*	−0.27*	0.35*	−0.29*	−0.42*	0.57*	−0.32*	0.31*	−0.22*	−0.40*	−0.41*				
15. Situational offense severity	3.90 (1.83)	−0.18*	0.41*	0.19*	0.03	−0.08	0.73*	0.49*	−0.22*	0.46*	−0.08	0.26*	0.30*	0.33*	−0.26*			
16. Experimental lying intentions	2.98 (1.82)	−0.26*	0.28*	0.45*	0.38*	−0.21*	0.23*	0.29*	−0.15*	0.27*	0.04	0.10	0.58*	0.50*	−0.22*	0.20*		
17. Experimental secrecy intentions	3.19 (1.86)	−0.17*	0.32*	0.45*	0.35*	−0.20*	0.19*	0.27*	−0.09	0.30*	0.03	0.08	0.57*	0.63*	−0.19*	0.20*	0.79*	
18. Experimental disclosure intentions	3.91 (1.93)	0.32*	−0.27*	−0.16*	−0.19*	0.29*	−0.24*	−0.29*	0.32*	−0.24*	0.03	−0.08	−0.20*	−0.24*	0.59*	−0.21*	−0.43*	−0.32*

Note. * $p < .05$.

Legend.

Correlations between main variables at the global level.

Correlations between main variables at the situational level.

Correlations between main variables for the hypothetical scenarios.

Hypothetical Scenarios

Information Management Strategies. In the hypothetical scenarios, we assessed the effects of our manipulation on adolescents' intentions to use each information management strategy of interest with their target parent. In line with our procedure at the situational level, we asked adolescents to rate the extent to which receiving their assigned parental apology response would incite them to (a) "lie to", (b) "keep secrets or hide things from", and (c) "confide in" their target parent in the future.

Plan of Analyses

Preliminary Analyses

We ran our analyses on R 3.4.1. We first ensured that our variables were normally distributed (i.e., skewness $\lessgtr$ |1|, kurtosis $\lessgtr$ |1|) and examined the percentages and patterns of missing data. We then verified the correlations between our variables of interest (global and situational levels) and the success of our experimental manipulation (hypothetical scenarios).

Main Analyses

Global and Situational Levels. For the main analyses at the global and situational levels, we examined whether parental NS and NT apology elements were associated with adolescents' information management strategies while (a) controlling for our covariates (i.e., frequency of parental offenses, adolescents' age, adolescents' sex, parents' gender, and parents' SES), and (b) considering the moderating role of the severity of parental offenses. We ran multivariate regressions with the ML estimator (or its MLR variant provided non-normal data distribution). We first tested for the presence of interaction effects between parental apologies and offense severity on all outcomes. Provided significant interactions, we intended to examine simple effects of parental apologies at one SD above and below the average severity. Provided non-significant interactions, we planned to assess main effects of parental apologies while modeling offense severity as an additional covariate. At the global level, we modeled adolescents' perceptions of their parents' NS and NT apology tendencies as our IVs, adolescents' lying, secrecy, and disclosure tendencies as our DVs, and adolescents' general perceptions of the severity of their target parent's offenses as our moderator. At the situational level, we modeled perceived (model 1) and coded (model 2) NS and NT apology elements of the described apology response as our IVs, adolescents' situational lying, secrecy, and disclosure intentions as our DVs, and adolescents' perceptions of the severity of the described parental offense as our moderator. To handle missing data at the global and situational levels, we used Full Information Maximum Likelihood (Lee & Shi, 2021).

Hypothetical Scenarios. For the main analyses of the hypothetical scenarios, we conducted a MANCOVA followed by a series of ANCOVAs and Tukey posthoc tests to examine whether our manipulation of parental apology responses resulted in differences in adolescents' lying, secrecy, and disclosure intentions, while adjusting for potential spillover effects related to the recalled parental apology response at the situational level and while considering the moderating role of the severity of

the described parental offense. To adjust for potential spillover effects, we statistically controlled for adolescents' perceptions of the NS and NT apology elements of the described parental apology response and for adolescents' lying, secrecy, and disclosure intentions following the described parental apology response. To test moderation effects, we followed the same analytical plan as the one used at the global and situational levels. To handle missing data in the hypothetical scenarios, we imputed 40 datasets using the EM algorithm, which we then aggregated into a single one (Lee & Shi, 2021).

Results

Global Level

Preliminary Analyses

At the global level, all data were normal (all kurtosis ≤ |1.00|, all skewness ≤ |1.12|). This confirmed our choice of using the ML estimator for our main analyses. Apart from target parents' socioeconomic status (which had missing data for 51.0% of participants – see Participants section), variables were missing 12.8% or less of their data ($M = 7.6\%$, SD = 4.8%). Little's MCAR test based on the normed chi-square revealed that data could be missing completely at random, $NC = 1.22$ (Ullman, 2001).

Correlations were in line with our general hypothesis (see Table 2 for the means, standard deviations, and correlations of all variables). Parental apology responses characterized by more NS and fewer NT elements were moderately negatively related to adolescents' lying and secrecy tendencies, and moderately positively related to adolescents' disclosure tendencies, $ps < .01$.

Main Analyses

Main analyses first revealed no interaction between the severity of parental offenses and parental apology elements, $ps \geq .18$. Main effects were thus examined. As shown in Table 3, parents' tendencies to offer NS apologies were positively associated with adolescents' disclosure tendencies, $p < .01$, whereas parents' tendencies to offer NT apologies were positively associated with adolescents' lying tendencies, $p < .01$. We found no other significant association between parental apologies and adolescents' information management strategies, $ps \geq .12$.

Situational Level

Preliminary Analyses

At the situational level, all variables were also normal (all kurtosis ≤ |1.15|, all skewness ≤ |1.01|). This confirmed our choice of using the ML estimator. Examining missing data revealed two noteworthy results. First, as reported in the Measures section, 26.7% of the described parental apology responses could not be coded and were thus missing. Second, as reported in our preliminary analyses at the global level, 51.0% of answers were missing for socioeconomic status. All other variables at the situational level were missing 12.8% or less of their data ($M = 7.2\%$, SD = 2.9%). Little's MCAR test based on the normed chi-square revealed that data could be missing completely at random, NC

Table 3
Standardized Beta Coefficients (Standard Errors) for the Main Analyses at the Global Level.

	General lying tendencies	General secrecy tendencies	General disclosure tendencies
General NS apology elements	0.01 (0.07)	−0.01 (0.07)	0.21 (0.07)**
General NT apology elements	0.22 (0.07)**	0.07 (0.07)	−0.11 (0.07)
General frequency of parental offenses	0.25 (0.08)**	0.25 (0.08)**	−0.29 (0.08)***
General severity of parental offenses	0.04 (0.08)	−0.03 (0.08)	0.07 (0.08)
Adolescent age	−0.09 (0.06)	−0.04 (0.07)	0.02 (0.06)
Adolescent sex (0 = Girls; 1 = Boys)	0.22 (0.07)**	0.29 (0.07)***	−0.14 (0.07)*
Parent gender (0 = Mother; 1 = Father)	0.05 (0.06)	−0.03 (0.06)	0.00 (0.06)
Socioeconomic status	−0.12 (0.08)	−0.15 (0.09)	−0.09 (0.09)

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

= 1.38 (Ullman, 2001).

As can be seen in Table 2, correlations at the situational level were similar as those at the global level. Situational perceived apology responses characterized by more NS and fewer NT elements were moderately negatively associated with adolescents' situational lying and secrecy intentions and moderately positively associated with adolescents' situational disclosure intentions, all $ps < .001$. Coded apology responses were related to adolescents' situational information management strategies in the same direction, though correlations were weaker and the association between coded NS apology elements and lying intentions only reached the margin of statistical significance, $p = .06$, all other $ps \leq .03$.

Main Analyses

Results from our main analyses first revealed a significant interaction between coded NT apology elements and the severity of the described parental offense on adolescents' secrecy intentions, $p = .05$, and no other significant interaction, all $ps \geq .24$. We thus examined the main effects of parental apologies on all outcomes, with this one exception. As shown in Table 4, after adjusting for our covariates, parental apology responses perceived as including more NS elements and fewer NT elements remained positively associated with disclosure intentions and negatively associated with secrey and lying intentions, though the relation between NT apology elements and disclosure did not reach statistical significance, $p = .08$, other $ps \leq .04$. Fewer significant relations were observed between coded parental apologies and adolescents' information management strategies after adjusting for our covariates. Coded NS apology elements were positively related to disclosure intentions, $p = .01$, but not to lying and secrecy intentions, $ps \leq .66$. Coded NT apology elements were not associated with lying nor disclosure intentions, $ps \geq .50$, and they interacted with offense severity such that they were only positively related to adolescents' secrecy intentions to the margin of statistical significance when the offense severity was low, $p = .09$, and unrelated to secrecy when the offense severity was high, $p = .26$.

Hypothetical Scenarios

Preliminary Analyses

For the hypothetical scenarios, variables were normally distributed (all skewness $\leq |0.70|$, all kurtosis $\leq |1.12|$) and were missing 12.06% or less of their data ($M = 10.6\%$, $SD = 1.3\%$). Little's MCAR test based on the normed chi-square revealed that data could be missing completely at random, $NC = 0.58$ (Ullman, 2001).

Table 5 presents the results of our manipulation check. We observed significant differences between conditions on adolescents' apology perceptions, $p < .001$. Posthoc tests revealed that adolescents in the NT condition believed that their assigned parental response was an apology to a greater extent than those in the no apology condition, $p < .001$, but to a lesser extent than those in the basic apology and NS conditions, both $ps < .001$. Unexpectedly, there was no difference between the basic

apology and the NS conditions, $p > .99$.

Main Analyses

Examining the impact of our experimental manipulation on adolescents' information management strategies at the multivariate level revealed no interaction effect with the severity of the offense, $p = .57$, but a significant main effect of our experimental manipulation, Wilks' $\Lambda = 0.86$, $F(3, 671.9) = 4.66$, $p < .001$, $\tau^2 = 0.05$. We thus examined main effects for each outcome.

As can be seen in Table 5, adolescents significantly differed in their lying, secrecy, and disclosure intentions according to their experimental condition, $ps < .001$. Tukey post-hoc tests revealed that adolescents in the no apology and the NT conditions had similarly ($ps \geq .78$) greater lying intentions, greater secrecy intentions, and lower disclosure intentions towards their target parent following the assigned parental apology response, compared to those in the basic apology and NS conditions, though the difference between the NS and the NT conditions was only marginally statistically significant for adolescents' disclosure intentions, $p = .08$, other $ps < .01$. There was no difference between the basic apology and the NS conditions in adolescents' lying, secrecy, and disclosure intentions, all $ps \geq .99$.

General Summary of the Results

As can be seen in Fig. 1, we obtained support for the general hypothesis that parental apologies characterized by more NS and fewer NT elements are related to more open and transparent information management strategies in adolescents in terms of disclosure, secrecy, and lying. In the correlational designs (i.e., at the global and situational levels), the relation between parental apologies and adolescents' information management strategies was relatively consistent with SDT's dual process model (Vansteenkiste & Ryan, 2013). At the global level, NS apology elements were related to dislosure (but not lying and secrecy) tendencies, whereas NT apology elements were associated with lying (but not disclosure) tendencies. Parental NT apologies were not associated with secrecy tendencies, however. At the situational level, perceived and coded NS apology elements were positively associated with disclosure intentions, perceived and coded NT apology elements were positively related to secrecy intentions (although coded NT apology was only related to secrecy when offense severity was low and only to the margin of statistical significance), and perceived (but not coded) NT apology elements were positively associated with lying intentions. Further, all observed negative associations between perceived NS and lying or secrecy as well as between perceived NT apologies and disclosure were weaker (with ßs ranging from -0.11 to -0.14) than their counterpart positive associations (with ßs ranging from 0.36 to 0.45). Finally, results using hypothetical scenarios supported and extended results from our correlational designs by suggesting, through an experimental design, that parental NS apologies (whether basic or elaborated) were related to more open and transparent information management

Table 4
Standardized Beta Coefficients (Standard Errors) for the Main Analyses at the Situational Level, with Perceived / Coded Parental Apology Responses.

	Situational lying	Situational secrecy	Situational disclosure
Situational NS apology elements	$-0.13 (0.06)^* / -0.02 (0.07)$	$-0.14 (0.07)^* / -0.03 (0.07)$	$0.45 (0.05)^{***} / 0.20 (0.07)^{**}$
Situational NT apology elements	$0.40 (0.06)^{***} / 0.05 (0.08)$	$0.36 (0.06)^{***} / $ low severity: $0.27 (0.16)^{\dagger}$ high severity: $-0.11 (0.09)$	$-0.10 (0.06) / -0.00(0.08)$
General frequency of parental offenses	$0.11 (0.07) / 0.25 (0.07)^{***}$	$0.14 (0.07)^* / 0.28 (0.07)^{***}$	$-0.11 (0.07) / -0.32 (0.07)^{***}$
Situational severity of parental offenses	$0.03 (0.07) / 0.17 (0.08)^*$	$0.07 (0.07) / 0.21 (0.07)^{**}$	$-0.06 (0.07) / -0.07 (0.08)$
Adolescent age	$-0.01 (0.06) / -0.00 (0.06)$	$0.00 (0.06) / 0.01 (0.06)$	$-0.06 (0.06) / -0.10 (0.06)$
Adolescent sex (0 = Girls; 1 = Boys)	$0.00 (0.06) / 0.07 (0.07)$	$0.05 (0.06) / 0.12 (0.07)$	$-0.05 (0.06) / -0.08 (0.07)$
Parent gender (0 = Mother; 1 = Father)	$0.08 (0.06) / 0.04 (0.06)$	$0.05 (0.05) / 0.01 (0.06)$	$-0.08 (0.05) / -0.07 (0.06)$
Socioeconomic status	$-0.10 (0.08) / -0.14 (0.09)$	$-0.07 (0.08) / -0.13 (0.08)$	$0.08 (0.07) / 0.08 (0.08)$

Note. $^{\dagger}p < .10$; $^* p < .05$; $^{**} p < .01$; $^{***} p < .001$.

Table 5
Results of the Preliminary and Main Analyses for the Hypothetical Scenarios.

Outcome variables	ANOVA	η2	Means (Standard Errors) for Each Condition			
			No apology	NT	Basic	NS
Apology	$F(3, 283) = 55.84$, $p < .001$	0.37	2.63 (0.20)[a]	4.03 (0.18)[b]	5.60 (0.16)[c]	5.58 (0.19)[c]
Lying	$F(3, 283) = 12.22$, $p < .001$	0.12	3.56 (0.18) [a]	3.52 (0.16) [a]	2.55 (0.14)[b]	2.61 (0.16) [b]
Secrecy	$F(3, 283) = 4.69$, $p < .01$	0.05	3.68 (0.17) [a]	3.55 (0.16) [a]	2.89 (0.14)[b]	2.86 (0.16) [b]
Disclosure	$F(3, 283) = 6.44$, $p < .001$	0.06	3.41 (0.19)[a]	3.66 (0.17)[ab]	4.31 (0.15) [c]	4.25 (0.18)[bc]

Note. Scores in the same row with a different subscript (a, b, c) differ at $p \leq .05$.
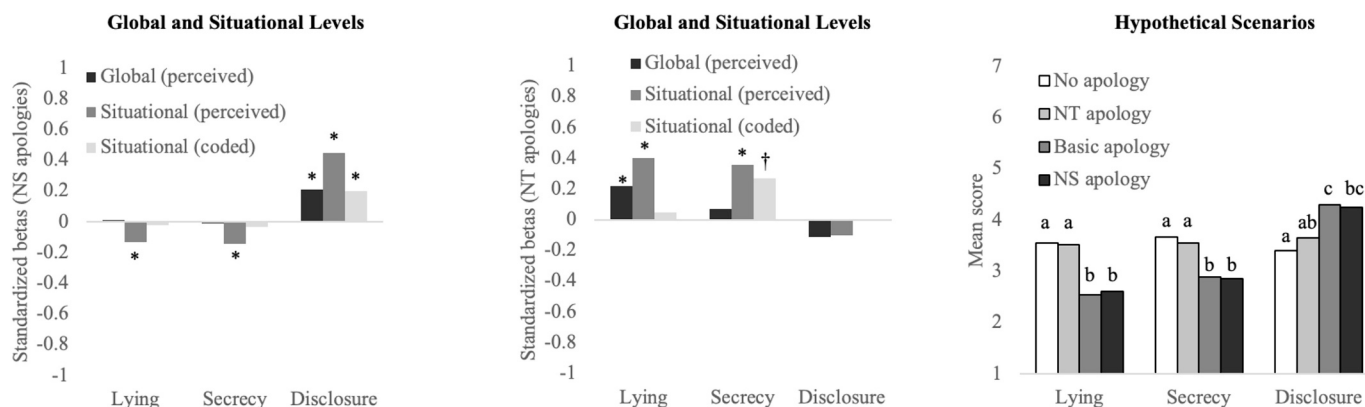

Fig. 1. Summary of the Results of the Main Analyses at All Levels of Assessment.
Note. NS = Need-supportive. NT = Need-thwarting. At the situational level, the relation between secrecy and coded NT apology elements is modeled at low levels of severity (at high levels of severity, $ß = -0.11$, $p = .26$). At the global and situational levels, $^{\dagger}p < .10$; $^{*}p < .05$. In the hypothetical scenarios, bars with different subscripts for each outcome (a,b,c) differ at $p \leq .05$.

strategies in adolescents, compared to NT or an absence of apologies.

Discussion

Within positive parent-adolescent relationships, parental knowledge of their adolescents' whereabouts and everyday experiences is predictive of adolescents' healthy adjustment (Abar et al., 2017). Yet to gain knowledge of their adolescents' lives, parents mostly need to rely on adolescents' willingness to share information with them (Kerr et al., 2010). Although important, adolescents' usage of open and transparent information management strategies with their parents can be challenging to achieve, especially when conflicts arise and hurtful behaviors occur. Anchored in social learning theory and SDT, we combined multiple methods and assessment levels to test the hypothesis that parental apologies characterized by more NS and fewer NT elements are positively related to adolescents' willingness to disclose information to their parents and negatively related to adolescents' tendency to lie to their parents and keep secrets from them.

Overall, our results support these hypothesized links between parental apologies and adolescents' lying and disclosure. However, they provide mixed support for the hypothesis that parental apologies, whether NS or NT, are related to secrecy. Indeed, the associations between parental apologies and adolescents' secrecy were sometimes non-significant for both NT and NS apologies (global level), sometimes significant for both NT and NS apologies (hypothetical level and situational level with perceived measure), and other times only marginally significant for NT apologies and only when offense severity was low (situational level with coded measure). The lack of a robust link between parental apologies and secrecy is consistent with other research showing a clearer role of NS and NT parenting behaviors in adolescents' disclosure and lying than in adolescents' secrecy (e.g., Baudat et al., 2020). In addition to potentially modeling a lack of open communication or of prioritization of the relationship, suboptimal parental apology responses may create frustration and anger among adolescents (Kirchhoff et al.,

2012), which may in turn elicit more overt or defiant responses such as lying, compared to more covert or avoidant responses such as secrecy (Van Petegem et al., 2015, 2017). Future research is needed to better understand the relation between apologies and secrecy.

Another pattern of results worth discussing further is the absence of any significant difference between the basic apology and the NS apology conditions in the hypothetical scenarios. At first glance, these similarities may suggest that any non-NT parental apologies are equally beneficial. Yet, they may also be indicative of potential issues regarding the external validity of our experimental manipulation (Aguinis & Bradley, 2014). Specifically, though we created our apology conditions based on a literature review of apology elements, it is possible that some conditions have not adequately reflected a response they could imagine their parent saying, thereby hampering adolescents' ratings of their effectiveness.

Finally, it is important to advise readers to take caution in interpreting results that only reached the margin of statistical significance. At the situational level, the correlations between perceived NT apologies and disclosure as well as between coded NT apologies and secrecy were only marginally significant. At the hypothetical level, NS apologies only marginally enhanced adolescents' disclosure, compared to NT apologies. In all three cases, it is possible to argue that these results reflect existing but weak effects that were not detected in our study due to a lack of statistical power (Faul et al., 2007; Kyriazos, 2018). For instance, SDT's dual process model expects weaker relations between NT apologies and disclosure (Vansteenkiste & Ryan, 2013). As another example, parenting studies tend to find weaker relations between parental behaviors and adolescent outcomes when parental behaviors are coded rather than reported by children (Cheung et al., 2016). Yet it remains possible that these relations are the mere reflection of sampling error, such that the observed marginally significant results should disappear in another sample (regardless of its size). Future research is thus needed to clarify these results.

Theoretical and Practical Contributions

Our current research makes key theoretical and practical contributions. First, this study is the first to integrate research on parental apologies (Lee et al., 2023) and on adolescents' information management strategies (Baudat et al., 2022). Accordingly, it is also the first to mobilize social learning theory and SDT to gain insights into the relation between apologies and information management strategies. In line with social learning theory (Bandura, 1978) our results suggest that the way parents manage their offensive behaviors towards their adolescents (i.e., whether and how they apologize) model and thus affect how adolescents manage the information they share (or do not share) with their parents. In line with SDT's dual process model (Ryan & Vansteenkiste, 2013), our results nuance that some parental apology elements (i.e., those identified as NS) more strongly foster adolescents' disclosure tendencies, whereas other elements (i.e., those identified as NT) more strongly encourage adolescents' lying tendencies.

Second, our research contributes to documenting the correlates of parental apologies. In line with past studies (Robichaud et al., 2024), our research shows that parental apologies seem to have relatively similar effects on adolescents' information management strategies with their parents regardless of the severity of the offense, at least for the types of offenses assessed in our study. Our results at the hypothetical level also mirror those from past studies (Robichaud et al., 2024) by showing that NT parental apology responses and a lack of parental apologies seem to have similarly more negative effects, compared to NS parental apology responses (whether basic or more elaborated).

As such, our research helps to take a preliminary step towards offering specific communication tools that parents may use with their adolescents to address the undesirable, yet common, situations where they behave offensively towards them. According to our results, parents optimally foster adolescents' usage of open and transparent information management strategies when they (1) offer apologies that (2) include NS elements (e.g., expressing remorses, taking responsibility for their mishaps, acknowledging the harm done to their adolescent) and that (3) exclude NT elements (e.g., justifying their mishaps, minimizing their consequences, blaming their adolescent for their mishaps). These results in turn can inform parenting experts and contribute to the development of intervention programs that teach parents concrete strategies to offer proper reparation for their mishaps.

Strengths, Limitations, and Future Research

Our study presents methodological strengths that deepen the confidence in its contributions and conclusions. A first strength is the many ways in which parental apologies were measured. By establishing the reproducibility of our results using multiple levels of assessment that can balance their respective strengths and limitations (Briesch et al., 2014), we could show that adolescents' information management strategies seem to be related to parental apologies regardless of whether they are measured using adolescents' internal cognitions (self-report), more objective methods (coding), or random assignment to hypothetical scenarios (experimental). Another noteworthy methodological strength is our statistical control for confounds. In our correlational designs, taking into account the frequency and severity of parental offenses permitted isolation of the unique role of parental apologies in adolescents' information management strategies. In our experimental design, statistically controlling for parents' actual apology responses and adolescents' actual intentions to each assessed information management strategy raised confidence that our results were attributable to our manipulation rather than to spillover effects.

At the same time, our study presents limitations that should be considered when interpreting our results and addressed in future research. First, asking adolescents to target the parent with whom they interact the most had the advantage of offering data on both mother and father apologies, but may have created undesired biases. For instance, it is possible that the parents with whom adolescents interact the most are also the parent with whom adolescents have the better relationship or the fewer conflicts. This in turn may have led to recalled offenses with lower severity, thereby preventing the generalizability of our results to more severe offenses. In line with this possibility, participants only somewhat agreed that the recalled offense was severe on average (i.e., $M = 3.9$, $SD = 1.8$). Future research could address this issue by asking adolescents to fill out the same questionnaire separately for their two parents (when applicable). Other approaches include randomly assigning adolescents to focus on one of their parents, or asking adolescents to think about the parent with whom they have the most conflicts.

Another limitation concerns missing data. Though handled with rigorous methods, missing data were nonetheless relatively high. One explanation for our percentage of missing data is related to the fact that some students were not able to finish the questionnaire during their class period. To address this issue, future research may carry out the different stages of the study at different times (e.g., throughout 2 or 3 class periods).

Future research could also examine how various factors influence the effectiveness of parental apologies. As a first example, research shows that adolescents reason differently about how to manage information with their parents depending on its social domain, with adolescents feeling more obligated to disclose prudential issues and less obligated to disclose personal issues (Smetana et al., 2006). One may thus hypothesize that NS parental apologies could lead adolescents to further disclose prudential issues, but not personal issues. As a second example, adolescents may respond more negatively to apologies when they are uncalled for (e.g., receiving a second apology after having already forgiven the parent; receiving an apology for a parental behavior that was not offensive). One might anticipate that unnecessary parental apologies are ineffective, but one could also argue that such apologies would be pressuring to adolescents (e.g., by creating an urge to reassure their parents) and thus be appraised negatively (Soenens et al., 2015). This could in turn lead adolescents to lie or keep secrets to avoid uncomfortable interactions (Soenens et al., 2006).

Conclusion

Parental offensive behaviors towards adolescents are common but can hamper adolescents' willingness to share information with their parents. Our present study highlights the importance of offering NS (vs. NT or an absence of) apologies when parents have behaved offensively; NS apologies relate to information management strategies in adolescents that are characterized by greater openness and transparency.

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Jean-Michel Robichaud declares no conflict of interest.
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CRediT authorship contribution statement

Jean-Michel Robichaud: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software,

Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Julien S. Bureau:** Writing – review & editing, Methodology, Conceptualization. **Grégoire Zimmermann:** Writing – review & editing, Methodology. **Geneviève A. Mageau:** Writing – review & editing, Methodology, Funding acquisition, Conceptualization. **Karina Schumann:** Writing – review & editing, Methodology, Funding acquisition, Conceptualization. **Hali Kil:** Writing – review & editing, Funding acquisition, Conceptualization. **Stijn Van Petegem:** Writing – review & editing, Methodology.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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