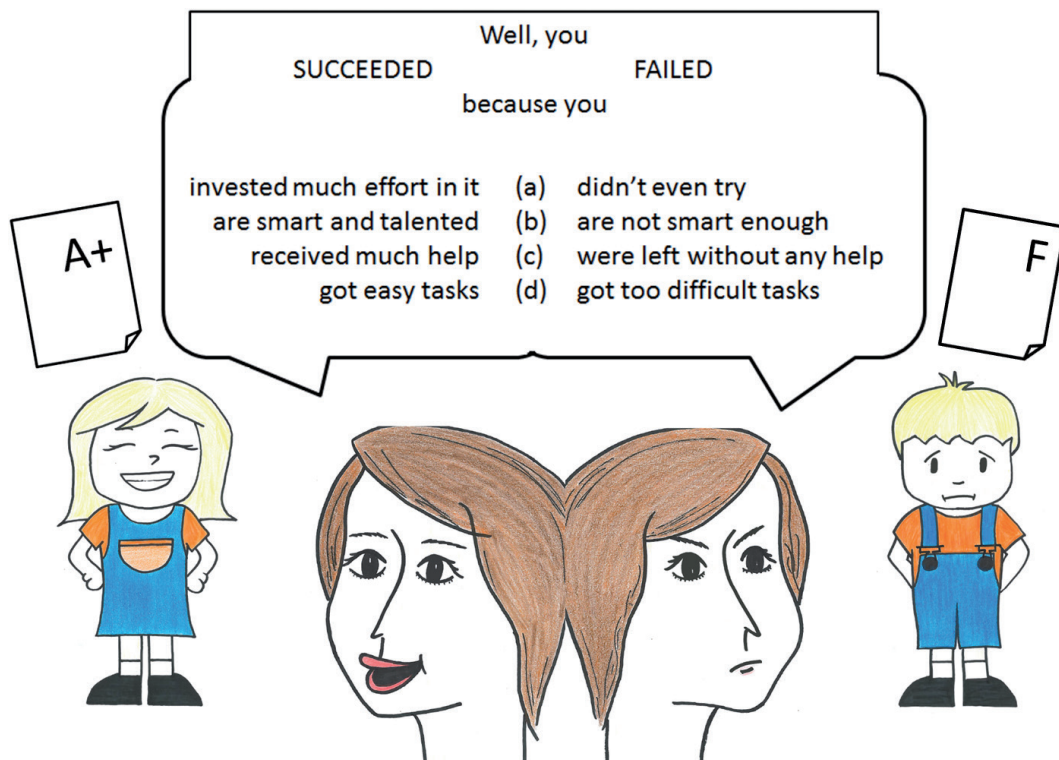


Emmi Enlund

# Stability and Variability in Parents' Causal Attributions for Their Child's Academic Success and Failure



Emmi Enlund

Stability and Variability in  
Parents' Causal Attributions  
for Their Child's Academic  
Success and Failure

Esitetään Jyväskylän yliopiston yhteiskuntatieteellisen tiedekunnan suostumuksella julkisesti tarkastettavaksi yliopiston Mattilanniemen A-rakennuksen salissa MaA211 marraskuun 25. päivänä 2016 kello 12.

Academic dissertation to be publicly discussed, by permission of the Faculty of Social Sciences of the University of Jyväskylä, in Mattilanniemi, auditorium MaA211, on November 25, 2016 at 12 o'clock noon.



UNIVERSITY OF JYVÄSKYLÄ

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“The underlying causes of events, especially the motives of other persons, are the invariances of the environment that are relevant to him; they give meaning to what he experiences and it is these meanings that are recorded in his life space, and are precipitated as the reality of the environment to which he then reacts.”

Fritz Heider (1958, 81)

## ABSTRACT

Enlund, Emmi

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Diss.

This research examined the mean-level, interindividual and intraindividual stabilities in parents' causal attributions for their child's performance outcomes. Parental causal attributions to ability, effort, teaching and task difficulty were studied separately for mothers and fathers. Three Finnish data sets were used. The first sample was derived from the *Jyväskylä Entrance into Primary School* study, in which 212 children and their parents were followed from the beginning of the first grade to the end of the ninth grade. The second sample included over 1,700 children and their parents from the *First Steps* study, in which the participants were followed from the beginning of the first grade to the end of the third grade. The third sample was part of the *Parents, Teachers and Children's Learning* study, which encompassed 162 children and their parents, who were examined twice during the child's first grade of elementary school. The findings of these studies suggest, first, that the mean-level changes in parents' causal attributions to ability, effort, teaching and task difficulty in regard to their child's successes and failures in comprehensive school were rather small, based on the measurements conducted in the first and ninth grade. The most evident changes were a decrease in teaching and an increase in task difficulty attributions. Second, all causal attributions, apart from fathers' teaching attribution in success situations and mothers' effort attribution in failure situations, showed moderate interindividual stability. Third, parental causal attributions varied significantly from one day to another. Thus, intraindividual stability was relatively low. Overall, the results add to our understanding of the long-term stability of parental causal attributions from children's start to finish of their comprehensive school education, as well as of the day-to-day variation in the parents' causal interpretations regarding their child's performance in various learning situations.

Keywords: parental causal attributions, mean-level stability, interindividual stability, intraindividual stability, success and failure, comprehensive school children

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## TIIVISTELMÄ (FINNISH ABSTRACT)

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Pysyvyys ja vaihtelu vanhempien lapsensa oppimissuoriutumista koskevilla syyselityksissä

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Diss.

Tämän tutkimuksen tavoitteena oli selvittää, miten pysyviä ovat ne syyt, joilla vanhemmat selittävät lapsensa onnistumisia ja epäonnistumisia oppimistilanteissa. Tutkittaviksi syiksi valittiin kyky, yritys, opetus ja suoritettavan tehtävän vaikeus. Pysyvyyttä tutkittiin kolmella eri tavalla kolmen eri tutkimuksen aineistoilla. Aineistot olivat peräisin tutkimuksista Koulutaidot ja motivaatio, Alkuportaot sekä Vanhemmat, lapset ja oppiminen. Ensin tutkittiin, tapahtuuko vanhempien raportoimien syiden tärkeysjärjestyksessä keskiarvotason muutosta lapsen ensimmäiseltä luokalta peruskoulun viimeiselle luokalle. Tulokset osoittivat, että keskiarvotason muutokset olivat vähäisiä. Selvin muutos tapahtui opetuksen ja suoritettavan tehtävän vaikeuden merkitsevyyden arvioissa: opetuksen merkitys lapsen suoriutumisen selittäjänä väheni ja tehtävän vaikeuden merkitys kasvoi. Kykyselityksen tarkempi tarkastelu osoitti, että vanhemmat erosivat toisistaan erityisesti sen perusteella, miten paljon he uskoivat lapsen suoriutumisen johtuvan lapsen kyvyistä tai kykyjen puutteesta, eivätkä sen perusteella, millaisia muutoksia kyvyn merkittävyyden arvioissa tapahtuu lapsen kolmen ensimmäisen kouluvuoden aikana. Toiseksi selvitettiin syyselitysten suhteellista pysyvyyttä eli sitä, muuttuuko vanhempien välinen järjestys syyselitysten tärkeyden arvioinneissa ensimmäiseltä luokalta yhdeksännelle luokalle. Tulokset näyttivät syyselitysten olevan jokseenkin pysyviä, mutta järjestyksessä tapahtui myös huomattavan paljon vaihtelua. Lisäksi havaittiin, että äitien selitykset lapsen onnistumisille olivat pysyvämpiä kuin isien, kun taas isien selitykset lapsen epäonnistumisille olivat pysyvämpiä kuin äitien. Kolmanneksi tutkittiin sitä, miten paljon vanhempien syyselitykset vaihtelevat tilanteesta toiseen päivittäisessä elämässä. Tulokset osoittivat, että suurin osa syyselityksissä havaitusta vaihtelusta aiheutui siitä, että vanhemmat arvioivat tutkittujen syiden tärkeyden eri onnistumistilanteissa eri tavoin. Pienempi osa vaihtelusta johtui siis vanhempien välisistä eroista. Kaiken kaikkiaan tutkimus tuotti uutta tietoa vanhempien syyselitysten pitkäaikaisesta pysyvyydestä sekä siitä, miten vanhempien syyselitysten muodossa antama palaute lapselle vaihtelee päivittäisissä tilanteissa.

Avainsanat: vanhempien syyselitykset, keskiarvotason muutos, suhteellinen pysyvyys, päivittäinen vaihtelu, lapsen onnistuminen ja epäonnistuminen, kouluikäiset lapset

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Finally, I could try to thank you, Jonne, with my own words. However, describing all the inspiration, support, and love you have given me during this process and during all these years would require writing another book, so to be clear and efficient I will cite these lyrics by Silbar and Henley:

*“Did you ever know that you’re my hero,  
And everything I would like to be?  
I can fly higher than an eagle,  
For you are the wind beneath my wings.”*

Jyväskylä, September 2016  
Emmi Enlund

## LIST OF ORIGINAL PUBLICATIONS

- I Enlund, E., Aunola, K., & Nurmi, J.-E. (2015). Stability in parents' causal attributions for their children's academic performance: A nine-year follow-up. *Merrill-Palmer Quarterly*, 61, 509–536.
- II Enlund, E., Aunola, K., Tolvanen, A., Lerkkanen, M.-K., & Nurmi, J.-E. (2016). Developmental profiles of parents' ability attributions for their child's successes and failures at school. Submitted manuscript.
- III Enlund, E., Aunola, K., Tolvanen, A., & Nurmi, J.-E. (2015). Parental causal attributions and emotions in daily learning situations with the child. *Journal of Family Psychology*, 29, 568–575.

Taking into account the instructions given and comments made by the co-authors, the author of this dissertation wrote the original research plan, applied previously collected data, conducted the analyses, and wrote the reports of all three publications.

## FIGURES

FIGURE 1 Illustration of mean-level stability. ....	18
FIGURE 2 Illustration of mean-level stability in three example subgroups. ....	18
FIGURE 3 Illustration of high and low interindividual stability in five example individuals. ....	19
FIGURE 4 Illustration of high and low intraindividual stability in two example individuals. ....	20

## TABLES

TABLE 1 Summary of the participants and methods used in the original Studies I-III. ....	25
TABLE 2 Proportions (%) of parents' level of education and family status in the three samples and Finnish population. ....	27
TABLE 3 Summary of the results: Effect sizes regarding mean-level stability, coefficient of determinations for interindividual stability, and intraclass correlations determining intraindividual stability. ....	32

## CONTENTS

ABSTRACT

TIIVISTELMÄ (FINNISH ABSTRACT)

ACKNOWLEDGEMENTS

LIST OF ORIGINAL PUBLICATIONS

FIGURES AND TABLES

CONTENTS

1	INTRODUCTION .....	13
1.1	Theories on causal attribution.....	14
1.2	Parental causal attributions.....	15
1.3	Definitions of stability .....	17
1.4	Stability in parental causal attributions.....	20
1.5	Aims of the empirical studies .....	22
2	METHOD .....	24
2.1	Participants .....	24
2.2	Measures .....	26
2.3	Statistical analysis .....	28
3	RESULTS .....	29
3.1	Ability .....	29
3.2	Effort .....	30
3.3	Teaching .....	30
3.4	Task difficulty.....	31
4	DISCUSSION .....	33
4.1	Mean-level stability .....	33
4.2	Interindividual stability .....	35
4.3	Intraindividual stability .....	36
4.4	Strengths, limitations, and future directions .....	37
4.5	Concluding remarks.....	40
	YHTEENVETO (SUMMARY).....	41
	REFERENCES.....	44

ORIGINAL PAPERS

## 1 INTRODUCTION

Annie, seven years old, comes home from school looking happy, holding a handout. "Mum, mum!" she calls out already from the porch and comes running to the kitchen, where her mother is feeding Annie's baby-brother. "Look! I managed to get all the sums right and the teacher gave me a sticker!" Her mother cannot but smile when she sees her daughter's happy face, even though she notices the pair of shoes still on her feet. "Is that so?" she asks with a smile on her face. "That's wonderful! You've been practicing very hard and now you've become such an expert! Could you take your shoes to the porch so mum can then look at this more closely?"

Meanwhile, William, a boy from Annie's class, comes home from school, tossing his backpack on the floor in frustration. "What are you raging for back there?" shouts his mother from the kitchen and walks into the hall, drying a casserole dish she's just finished washing. "School is just stupid" moans William gloomily while kicking his shoes off his feet. "Oh, what was so bad about it?" asks his mother and leans her shoulder on the doorframe, the dish towel in her hand moving back and forth. "I don't know how to do it" huffs William and squeezes past his mother in the hall, crossing the living room to disappear into his room. His mother follows him. "What is it now that you can't do?" she asks, her voice already starting to grow tense. "Well, anything!" William cries out, lying on the floor. His mother lets out an annoyed sigh. "Sure you can do something! There's a teacher in the school who should teach you. The exercises she gives you must be too hard." William calms down. Yes, that must be it - the teacher is just stupid.

The short stories above are examples of everyday situations on the bases of which parents form interpretations concerning the causes of their child's performance at school. These interpretations of the causes of events are described as causal attributions. Research on causal attributions originates from the field of social cognition, which can be broadly defined as the process whereby people make sense of other people and themselves (Fiske & Taylor, 1991). Causal attributions are subjective perceptions or beliefs, not necessarily the actual causes (Weiner, 1992). The kind of causal attributions people make depend on many factors, including the contextual features of the situation, enduring beliefs and expectancies of the attributor, and hedonic factors that result in ascriptions favorable to the attributor (Weiner, 1992). For example, Annie's mother might have spent the day before helping Annie practice the skills that the teacher would be testing and thus concluded that the effort Annie invested has paid off. Williams' mother, on the other hand, may want to encourage her son by pointing out that the failure was not his fault and there's no reason to blame himself.

This research focused on four common causal attributions parents use in assessing the causes of their child's success and failure in their learning context: *ability*, *effort*, *teaching/help*, and *task difficulty* (Ames & Archer, 1987; Weiner, 1992). These attributions have been vastly studied using experimental and empirical approaches, as well as through short vignettes and closed-choice questionnaires (Weiner, 1992). However, in former studies change or stability in parental causal attributions has rarely been the focus of interest (for a review, see Miller, 1995). Thus, the aim of this research was to gain knowledge concerning the stability and naturally occurring changes in parental causal attributions. The stability and variability in parental causal attributions may play a crucial role in child development as the stability of such attributions provides a basis for the lasting developmental environment of the child, whereas varying parental causal attributions create a more diverse environment for the child.

## 1.1 Theories on causal attribution

Attribution theory, as first proposed by Fritz Heider (1958), was concerned with people's naïve theories on why certain events have taken place. In particular, the focus was on person perception, that is, how people explain the behavior of others (Antaki, 1982). Heider presumed that individuals search for understanding and attempt to be rational in their inferences (Weiner, 1990). However, Heider did not claim that the causal interpretations are objective and true: causal attributions may not only be based on incomplete knowledge of the situation, but they may also be distorted by motivational aspects (Weary, Stanley, & Harvey, 1989). Heider was especially concerned with causal attributions in achievement-related contexts (Weiner, 1990). To these attributions, he introduced the dimension named *locus* by separating possible causal attributions into two categories: those related to internal causes, that is, rooted within the person (e.g., ability and effort), or to external causes, that is, rooted in the environment (e.g., other people or given tasks). For example, he theorized that achievement performance is influenced by both "can" and "try," where "can" is conceived as the relation between ability and task difficulty and "try" is solely based on the amount of effort (Weiner, 1990).

Jones and Davis (1965) as well as Kelley (1967) further elaborated Heider's distinction between internal and external causes. Jones and Davis concentrated on how people came to attribute others' successes and failures with certain internal dispositions based on a single event (Antaki, 1982), whereas Kelley focused on situations where people had knowledge about multiple events. He assumed that covariation, that is, which factors are present and which are absent during the event one is attributing causes to, is the foundation of the attribution process (Weiner, 1992): people could decide, based on the covariation, whether the cause of the action was internal or external.



Bernard Weiner (1972) expanded Heider's theory by introducing two other dimensions to causal attributions in addition to locus. First, *stability* defined whether the cause was stable, that is, long-lasting or constant from one situation to another (e.g., ability), or unstable, that is, likely to change from one situation to another (e.g., effort). Second, *controllability* described whether the causes behind one's actions can be controlled by the actor (e.g., effort) or not (e.g., the quality of teaching or task difficulty). Originally, Weiner's *attributional theory of achievement motivation and emotion* (Weiner, 1985) accounted for people's attributions regarding their own outcomes. Based on these three dimensions, the theory makes predictions about how the causal attribution made regarding a particular achievement outcome is going to affect future expectations, self-esteem, behavior and performance (Weiner, 1992). Later, Weiner's theory was extended to also encompass the ways in which parents explain and evaluate their children's performance, both successes and failures (Weiner, 1992), which was the focus of the present research.

## 1.2 Parental causal attributions

Parents' causal attributions for their child's performance outcomes play an important role in the interaction between the parent and the child. For example, parents' causal attributions may affect their behavior toward their children and hence the ways in which their children develop (Miller, 1995). It has been suggested that parents' causal attributions not only influence the expectations and aspirations they have regarding their children's performance but also the support, advice and guidance they give to their children (Murphey, 1992). Furthermore, previous studies have shown that in addition to parenting practices, parents' perceptions of their children's academic achievement are associated with their children's self-concept of ability, and even more strongly so than the children's school grades (Frome & Eccles, 1998; Rytönen, Aunola, & Nurmi, 2007).

There are at least three attributional biases that may affect parental causal attributions. First, it has been shown that people tend to assume personal responsibility for successes by making more internal and stable attributions for positive events, but transfer responsibility to others for setbacks in order to see themselves positively (Weiner, 1992). This phenomenon is known as *self-serving bias* (Mezulis, Abramson, Hyde, & Hankin, 2004) or *hedonic bias* (Weiner, 1992). On the basis of this line of thinking, some studies have reported evidence for *child-serving bias*, that is, parents attributing their child's success to their child's own characteristic, such as ability, and failure to more controllable properties or external causes, such as lack of effort, poor teaching, or too difficult tasks (Kärkkäinen, Rätty, & Kasanen, 2011; Miller, 1995; Rytönen, Aunola, & Nurmi, 2005; Rätty, Kasanen, & Honkalampi, 2006; Yee & Eccles, 1988). The second attributional bias is the *actor-observer bias*, which is also referred to as *fundamental attribution error* (Weiner, 1992). It states that actors are more likely

to emphasize situational or external factors as the cause of their performances while observers tend to view the actor's performance as resulting from dispositional or internal causes (Jones & Nisbett, 1971). This bias would lead parents to attribute both their child's success and failure to ability and effort. Third, parental causal attributions have been found to be related to culture. In particular, in Western countries success is typically attributed to ability, whereas in Asian countries success is typically seen to be due to effort (Phillipson, 2006; Stevenson & Stigler, 1992; Weiner, 1992).

Only a few studies have explored how a parent's gender would affect his or her causal attributions. In many studies only mothers have been involved (e.g., Dunton, McDevitt, & Hess, 1988; Kinlaw, Kurtz-Costes, & Goldman-Fraser, 2001; Natale et al., 2008), and in some studies mothers and fathers have not been examined separately even though both have participated (Georgiou, 1999; Phillipson, 2006). The few studies involving both mothers and fathers have shown contradictory findings. Some studies have found only few if any differences between mothers and fathers (Cashmore & Goodnow, 1986; Parsons, Adler, & Kaczala, 1982; Yee & Eccles, 1988). It has also been found that mothers and fathers share causal attributions regarding their child's success, but not regarding their child's failure (Rytkönen et al., 2005). However, some studies have shown that a mother's thinking depends more on gender stereotypes, whereas a father's might rely more on a child's actual school achievement (Frome & Eccles, 1998), while yet other studies have suggested that mothers are more aware of their child's academic progress than fathers (Bird & Berman, 1985) and therefore make more accurate estimates concerning the causes of their child's performance.

Apart from the parent's gender, it has been shown that parents tend to explain their child's performance differently depending on the child's gender and the school subject. Parents typically attribute boys' success in math to ability while girls' success is typically attributed to effort and failure to lack of ability (e.g., Dunton et al., 1988; Eccles, Jacobs, & Harold, 1990; Hess & McDevitt, 1986; Holloway & Hess, 1985; Holloway, Kashiwagi, Hess, & Azuma, 1986; Jacobs & Eccles, 1992; Parsons et al., 1982; Rouland, Rowley, & Kurtz-Costes, 2013; Rätty, Vänskä, Kasanen, & Kärkkäinen, 2002; Yee & Eccles, 1988). Some other studies have shown that mothers attribute boys' success in math to more unstable causes, such as effort or task difficulty, compared to girls' success (Holloway, 1986). With regard to literacy, girls' performance is typically attributed more positively than boys' (e.g., Rouland et al., 2013; Rätty, Kasanen, & Honkalampi, 2006; Rätty, Kasanen, & Kärkkäinen, 2006). In turn, boys' literacy failures are more likely attributed to lack of ability than girls' (Rouland et al., 2013). Not all studies, however, have found children's gender to be a significant factor in predicting parental causal attributions (e.g., Cashmore & Goodnow, 1986; Cote & Azar, 1997; Natale, Aunola, & Nurmi, 2009; Rytkönen et al., 2005).

Parents' causal attributions are also related to their own educational attainment as well as to their children's level of performance at school. First, prior research has shown that the higher the parents' education, the more they

attribute their child's success to ability (Natale et al., 2008; Phillipson, 2006; Rytönen et al., 2005; Rätty, Kasanen, & Honkalampi, 2006). Furthermore, highly educated parents seem to show a stronger child-serving bias by attributing their child's success more strongly to the child's ability than other parents do (Kärkkäinen et al., 2011; Rätty, Kasanen, & Honkalampi, 2006). Second, the higher the level of children's past performance, the more frequently their mothers attribute their child's success, both in math and in literacy, to ability (Hess & McDevitt, 1986; Natale et al., 2008, 2009; Rytönen et al., 2005), and failure to lack of effort (Holloway & Hess, 1985; Natale et al., 2009). One study also showed that children's skills in literacy and mathematics seem to contribute equally to parents' causal attributions for their children's school achievement (Rytönen et al., 2005).

In addition to gender and the level of the child's school performance, parental emotions are one possible mechanism connected to variations in parental causal attributions for their child's performance outcomes. Existing affect-cognition theories and experimental findings suggest that mood influences the content of attributions (Forgas & Locke, 2005). Some studies have shown that positive emotions lead people to more positive attitudes toward others and to feeling more positive about people that they know (Lyubomirsky, King, & Diener, 2005). For example, when a mother's causal attributions and emotions were studied in relation to a child's problem behavior, the results indicated that positive emotions are negatively related to controllable and internal attributions such as effort (Bolton et al., 2003). This result suggests that a positive affect relates to blaming the child less than the lack of such an affect.

Given the connections between parents' causal attributions for their child's academic outcomes, parenting practices and child outcomes, the stability in parental causal attributions may play a crucial role in a child's development as the stability of such attributions provides the basis for the ongoing developmental environment of the child. For example, if parents' causal attributions are stable, they are likely to direct a child's development in a certain way over a long period, whereas unstable causal attributions create a more diverse environment for the child.

### 1.3 Definitions of stability

Stability in psychological constructs, such as parental causal attributions, can be defined and studied in several different ways. Prior studies have typically focused on three different kinds of stability: mean-level, interindividual and intraindividual stability. Mean-level stability refers to the similarity in the mean level of a particular causal attribution over time in a particular sample (see Figure 1).

Typically, studies on mean-level stability are variable-oriented and hence they treat the individuals as one homogenous group (Bergman & Magnusson, 1991). This kind of approach assumes that the mean levels of measured

variables are similar or the same for all individuals across time. Therefore, it does not take into account the possibility that different individuals may show different patterns of mean-level change. For example, while the whole sample's average score may show mean-level stability, there may be subgroups of individuals whose score increase or decrease across time (see Figure 2). It is possible to identify different patterns (i.e., profiles) of mean-level change among individuals over time by studying the mean-level stability of different subgroups of individuals with a person-oriented approach (Bergman, Magnusson, & El-Khoury, 2003). In this approach, individuals are organized into different subgroups in which the levels of causal attributions across time are as similar as possible within a subgroup, yet, at the same time, as different as possible from the other subgroups of individuals.

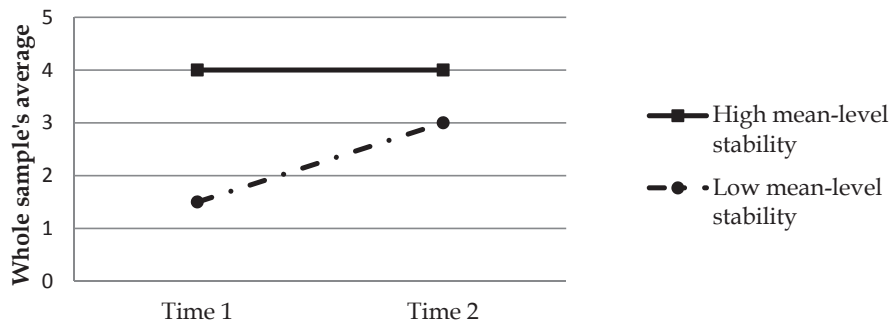


FIGURE 1 Illustration of mean-level stability. In this example case, when the mean-level stability is high, the average score does not change across the two measurement points. Contrastingly, when the mean-level stability is low the average score significantly increases or decreases across the two measurement points.

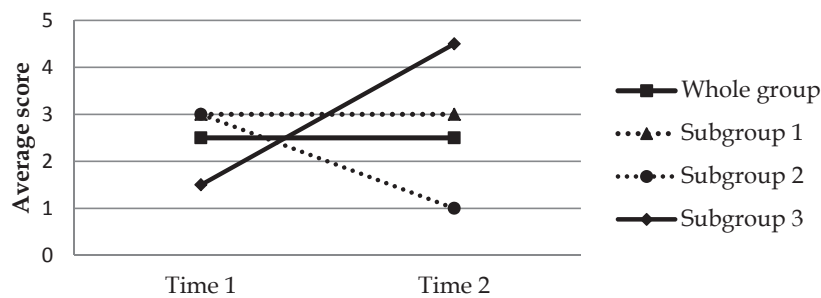


FIGURE 2 Illustration of mean-level stability in three example subgroups. While the whole group's average score shows high mean-level stability, there may be individuals whose score increases or decreases across time. The individuals representing similar kinds of profiles can be combined into different subgroups, whose profiles reflect the individuals' actual mean-level stability more accurately than the whole group's average.

Stability in causal attributions can also be described by calculating the *interindividual stability* of a characteristic over time. The interindividual stability refers to the consistency in the rank-ordering of individuals across different measurement points regardless of average changes over time (see Figure 3). Thus, it measures the stability of individual differences from one occasion to the next.

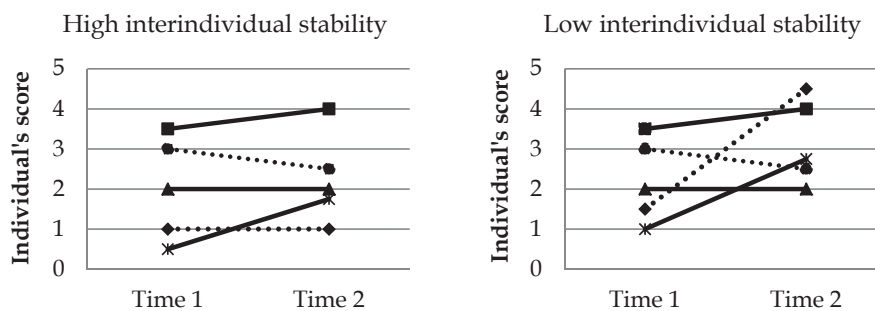


FIGURE 3 Illustration of high and low interindividual stability in five example individuals. When the interindividual stability is high, the rank order of the individuals stays relatively similar across the two measurement points, regardless of the average changes over time. Contrastingly, when the interindividual stability is low, the rank order differs significantly between the two measurement points.

Although interindividual stability describes individual differences in stability among a certain sample, it does not describe the within-person stability of the measured variable (Asendorpf, 1992). Consequently, the term *intraindividual stability* refers to within-person stability versus variability, that is, the consistency in the level of causal attribution from one time point to the next within a particular individual (see Figure 4). In other words, intraindividual stability means that individual's scores in different time points do not vary substantially from individual's average score of the construct. Respectively, between-person stability versus variability refers to the consistency in the level of causal attributions from one person to another. It does not describe interindividual stability but rather to what extent individuals' average score differ from the average score across all participants (Bolger, Davis, & Rafaeli, 2003).

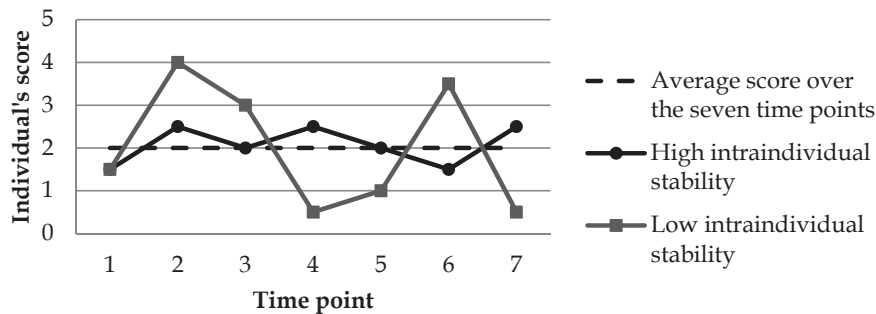


FIGURE 4 Illustration of high and low intraindividual stability in two example individuals. When intraindividual stability is high, the individual's scores at different time points are relatively close to his/her average score over time. When intraindividual stability is low, the individual's scores at different time points differ significantly from his/her average score over time.

#### 1.4 Stability in parental causal attributions

There are two theoretical approaches to the research of stability in parental causal attributions. First, parental causal attributions can be described in terms of attributional styles, that is, the tendency of parents to repeatedly make similar kinds of causal attributions for their child's performance (Weiner, 1992). Such attributional styles, after formation, provide a basis for the kinds of causal attributions parents use later on for their children's performance (Bugental, Johnston, New, & Silvester, 1998; Peterson & Steen, 2009). This view is based on the early concerns with parents' causal thought, which approached causal attributions as stable stylistic variables (Bugental & Happaney, 2002). Previous research has provided some support for this notion via studies examining the mean-level and interindividual stabilities in parental causal attributions. For example, studies have shown that the mean-level of parents' attributions to ability, effort, teaching and task difficulty stay at the same level during their children's first school year (Natale et al., 2008) and across their children's transition from preschool to second grade (Natale et al., 2009). Furthermore, Natale et al. (2009) found that during children's transition from preschool to primary school, interindividual differences in parental causal attributions were relatively stable, that is, the interindividual stability was relatively high.

Stable parental causal attributions lead parents to give either beneficial or harmful feedback to their child, systematically, depending on the cause to which they attribute the child's performance. For example, praising a child for his or her ability after success and blaming his or her ability after failure fosters a view of ability as a fixed trait that one either has or does not have (*entity theory of intelligence*; Dweck, 2000). This view leads the child to use performance-orientated learning strategies and may cause feelings of helplessness in



challenging situations (Dweck, 2000). However, in some cases parents' ability attributions may also be beneficial to the child's performance (see, for example, Miller, Brickman, & Bolen, 1975; Natale et al., 2009; Pomerantz & Dong, 2006). Attributing the child's performance to effort increases the use of mastery-orientated strategies and intrinsic motivation (*incremental theory of intelligence*; Dweck, 2000), whereas attributing the child's performance to external causes, such as teaching and task difficulty, can be harmful because it diminishes the child's belief in his or her capability to influence his or her own performance.

In second approach, parental causal attributions are not seen as fixed styles, but rather as flexible, context sensitive interpretations that vary from one time point to another (Bugental & Happaney, 2002). Previous theories concerning parents' causal attributions to their child's social behavior have suggested that, in the long run, the attributions may change due to age-based developmental changes in their child (Dix & Grusec, 1985). In particular, studies have shown that parents attribute their child's behavior increasingly to personality dispositions and consider their child's behavior to be in his or her own control (Dix, Ruble, Grusec, & Nixon, 1986; Dix, Ruble, & Zambarano, 1989; Gretarsson & Gelfand, 1988). In addition, one previous study, carried out during children's transition from preschool to primary school, showed that mothers and fathers increasingly attribute their children's academic success to ability and decreasingly to teaching (Rytkönen et al., 2005). These results and the theoretical assumptions reflect mean-level stability, that is, changes in the average score over time. However, no previous studies have attempted to measure intraindividual stability with respect to parental causal attributions. Hence, our understanding of the variability in parents' causal attributions in daily life is limited.

When parents' causal attributions change from one time point to another, the message given to their child is not as explicit as with fixed causal attributions. Changing parental causal attributions are likely to lead to a child's development of a more flexible view of his or her capabilities and it also promotes the child's ability to assess how the factors present in a certain situation may influence his or her performance. On the other hand, if parents' causal attributions change systematically as a result of their child's performance, this may allow the child to draw clear conclusions about why his or her parents end up making certain kinds of causal attributions.

These two approaches—parental causal attributions as fixed versus flexible constructs—are not exclusionary but rather different perspectives on the same phenomenon. For example, although parents' causal attributions for their children's performance show a relatively high mean-level stability in the sample as a whole (Natale et al., 2008, 2009), there may be parents within that sample whose causal attributions change over time. Furthermore, although parents' causal attributions for their child's performance show relatively high interindividual stability over time (Natale et al., 2009), it is still possible that there are intraindividual variations due to the dynamic and changing nature of parent-child interactions (Cox & Paley, 1997). In addition, the previous studies on mean-level and interindividual stability in parental causal attributions have

focused only on the early years of school and little research has been conducted over longer periods. The stability of parents' causal attributions over a longer period can be assumed to be important for children's academic achievement and adjustment, because such attributions form a stable developmental environment for children that does not only include parents' thinking but also their parenting practices (Murphey, 1992).

## 1.5 Aims of the research

This research examined the mean-level and interindividual stabilities in parents' causal attributions to ability, effort, teaching and task difficulty for their children's successes and failures over the children's nine-year compulsory education<sup>1</sup>. Extra emphasis was placed on ability attribution, which was studied with a person-oriented approach covering the children's first three school years. Ability is one of the most common attributions parents use to explain their child's successes (Cashmore & Goodnow, 1986; Dunton et al., 1988; Natale et al., 2008; Weiner, 1992), yet studies have shown contradictory findings regarding its advantages and disadvantages (Dweck, 2000; Miller et al., 1975; Natale et al., 2009; Pomerantz & Dong, 2006). To get an overall picture of the stability in parental causal attributions, the intraindividual stability of ability, effort, teaching and task difficulty were also investigated. For this purpose, diary data were used to determine the daily variations in parents' causal attributions for their child's successful situations during the child's first grade of compulsory education. Due to previous contradictory findings on the relation between parents' gender and their causal attributions, mothers and fathers were studied separately regarding all of the different stabilities.

This research focused solely on the mean-level, interindividual and intraindividual stabilities in parental causal attributions. The original studies also included research questions concerning the relation between the stabilities and some control variables—such as the child's gender and level of school performance, parents' level of education, and parental emotions—that are not described here. The following research questions were examined:

- 1) Does the mean level of parental causal attributions change from first grade through ninth grade (mean-level stability in whole sample; Study I)? The strength of the effect sizes of these changes were examined further.

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<sup>1</sup> Finnish children start their education with preschool, typically in the year of their sixth birthday. One year later, at age 7, they progress to compulsory school, where they continue for the next 9 years. Compulsory education is divided into primary school (Grades 1–6) and lower secondary school (Grades 7–9). Up to age 16, all Finnish adolescents have a similar basic education, except for a small minority (on average, 0.27%) who leave school without a certificate (Official Statistics of Finland, 2010a).



- 2) What kinds of profiles can be identified among mothers and fathers on the basis of their mean levels of ability attribution for their child's successes and failures from first grade through third grade (mean-level stability in sample subgroups; Study II)?
- 3) Do the individual differences in parental causal attributions for their child's successes and failures during first grade predict the individual differences in corresponding causal attributions during ninth grade (interindividual stability; Study I)? Also, the coefficient of determination was calculated for the prediction.
- 4) To what extent do mothers' and fathers' causal attributions regarding their child's success in learning situations vary within the parents from one day to another (intraindividual stability; Study III)?

## 2 METHOD

Studying mean-level and interindividual stabilities over the nine-year period of comprehensive school, grouping parents according to the mean levels of their ability attribution, and examining intraindividual stability on a daily basis imposes demanding data requirements. Therefore, three different longitudinal data sets were used in the three featured studies. First, in the Jyväskylä Entrance into Primary School study (JEPS study; Nurmi & Aunola, 2016), children and their parents were followed throughout the children's nine years of comprehensive school. Hence, the JEPS study enabled insights into these Finnish children's whole compulsory education. Second, the ongoing First Steps study (Lerkkanen et al., 2016) comprises over 1,800 children and their parents, which makes the data suitable for grouping analysis. Third, in the Parents, Teachers and Children's Learning study (LIGHT study; Aunola, Nurmi, & Viljaranta, 2016), the participants filled in diary questionnaires over a one-week period in the Fall semester and for another week in the Spring semester of their child's first grade, which made it possible to analyze the intraindividual stability in the parents' causal attributions. A brief description of samples, measures and statistical analyses is provided here. Detailed descriptions of the methods used are provided in the original studies, except for the effect sizes and the coefficient of determination, which were not included in the original studies. The methods used in all three studies are summarized in Table 1.

### 2.1 Participants

Study I was part of the JEPS study. The original sample of the JEPS study consisted of all children ( $n = 210$ ) residing in two medium-sized districts of Central Finland, who were born in 1993 and started kindergarten in 1999. During the study, new students who joined the participating classrooms were also recruited to the study. The data pertaining to the children and their parents,

TABLE 1 Summary of the participants and methods used in the original Studies I-III.

Study	Data set	Participants ( <i>N</i> )	Measured causal attributions	Studied stability	Statistical analyses used in the studies
I	The JEPS study <ul style="list-style-type: none"> <li>• Grade 1</li> <li>• Grade 9</li> </ul>	178 mothers and 145 fathers of 212 children	<ul style="list-style-type: none"> <li>• ability,</li> <li>• effort,</li> <li>• teaching,</li> <li>• task difficulty</li> </ul>	<ul style="list-style-type: none"> <li>• mean level</li> <li>• interindividual</li> </ul>	<ul style="list-style-type: none"> <li>• Structural equation modeling</li> </ul>
II	The First Steps study <ul style="list-style-type: none"> <li>• Grade 1</li> <li>• Grade 2</li> <li>• Grade 3</li> </ul>	1,721 mothers and 1,198 fathers of 1,721 children	<ul style="list-style-type: none"> <li>• ability</li> </ul>	<ul style="list-style-type: none"> <li>• mean-based grouping</li> </ul>	<ul style="list-style-type: none"> <li>• Latent profile analysis</li> <li>• Cross-tabulation</li> <li>• ANOVA</li> </ul>
III	The LIGHT study <ul style="list-style-type: none"> <li>• Grade 1, Fall</li> <li>• Grade 1, Spring</li> </ul>	159 mothers and 147 fathers of 162 children	<ul style="list-style-type: none"> <li>• ability,</li> <li>• effort,</li> <li>• help,</li> <li>• task difficulty</li> </ul>	<ul style="list-style-type: none"> <li>• intraindividual</li> </ul>	<ul style="list-style-type: none"> <li>• Intraclass correlations</li> <li>• Multilevel modeling</li> </ul>

when the children were in Grades 1 and 9, was used in Study I. From the first grade, 212 children (110 boys and 102 girls), who were 6–7 years old ( $M = 87$  months,  $SD = 3.3$  months), participated in the study, and also included 178 mothers and 145 fathers of the children. In the follow-up in ninth grade, 177 children (86 girls and 91 boys) participated, together with 150 mothers and 114 fathers of the children.

Study II was conducted as part of the ongoing First Steps study. In the first phase of the First Steps study, 1,880 children entering kindergarten were followed up to Grade 4. The children in the sample were recruited from three medium-sized towns and one smaller municipality located in Central, Western and Eastern Finland. The children represented the whole age cohort of three towns and about half of the age cohort from the smaller municipality. The sample in Study II consisted of 1,721 children (808 girls and 913 boys; 6–8 years old at the beginning of Grade 1,  $M = 7.25$  years,  $SD = 0.32$  months) and their mothers ( $n = 1,721$ ) and fathers ( $n = 1,198$ ), who participated in the study when the children were in Grade 1 (1,474 mothers, 1,022 fathers), Grade 2 (1,456 mothers, 1,008 fathers), and Grade 3 (1,350 mothers, 897 fathers).

The data used in Study III were derived from the LIGHT study. The original sample consisted of a total of 166 first graders and their parents from three medium-sized towns in Central, Western and Eastern Finland. The children were born in the years 1999, 2000 and 2001, and were 6 to 7 years old at the time of the first measurement. Data were gathered twice during the first grade: over seven successive days in the Fall semester and again over seven successive days in the Spring semester. The sample used in Study III consisted of the parents (159 mothers and 147 fathers) of 162 first grade students (83 girls and 79 boys, aged 6–7 years,  $M = 7.5$  years,  $SD = 3.6$  months). From the original 166 families contacted, the parents of four children did not respond to the daily questionnaire.

Information regarding the participants' education and family status is provided in Table 2. The parents who participated in the studies had a higher education than the Finnish population overall. In addition, the number of single-parent families was smaller in the samples compared to the general Finnish population. The number of children in the studied families ranged from 1 to 11, and the average number of children was fairly similar in all three samples and the Finnish population: Study I:  $M = 2.8$ ; Study II:  $M = 2.4$ ; Study III:  $M = 2.4$ ; Finnish population:  $M = 2.8$  (Official Statistics of Finland, 2014). All three samples were highly homogenous in ethnic and cultural background, which is characteristic of school populations outside Finland's metropolitan region.

## 2.2 Measures

In all three studies, parental causal attributions were measured by questionnaires sent separately to the mothers and fathers. In Studies I and III,

parents were asked to report their causal attributions for both their child's success and failure situations, whereas Study II focused only on success situations. Parents were asked to provide causal attributions for their child's general school performance (Study I, Grades 1 and 9; Study II, Grades 1-3), performance in mathematics and reading (Study I, Grade 9), and performance in any successful learning situation evidenced by the parent (Study III, Fall and Spring semesters of the child's first grade).

TABLE 2 Proportions (%) of parents' level of education and family status in the three samples and Finnish population.

	JEPS		First Steps		LIGHT		Population of Finland <sup>d</sup>	
	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Women	Men
Level of education:								
Basic education <sup>a</sup>	13.1	10.8	5.5	6.5	7.9	9.4	33.6	32.6
Upper secondary <sup>b</sup>	27.2	40.5	33.4	37.5	29.6	46.2	41.7	36.7
Tertiary <sup>c</sup>	59.7	48.7	61.1	56.0	62.5	44.2	30.7	24.7
Family status:								
Two parents	97		90		90		75	
One parent	3		10		10		25	

<sup>a</sup>International Standard Classification of Education (ISCED), Level 2 or less; <sup>b</sup>ISCED Levels 3 and 4; <sup>c</sup>ISCED Levels 5-8. <sup>d</sup>Official Statistics of Finland (2010b, 2014).

The questionnaires were based on items used in previous studies (Ames & Archer, 1987). The parents were presented statements (e.g., "If my child does well in school, it is probably because..."; "If my child does not know how to do some school assignments, it is probably because...") in regard to which they were either asked to rank four alternatives according to their importance (i.e., a = "My child receives good teaching" / "My child does not receive good teaching"; b = "My child makes an effort" / "My child does not make an effort"; c = "My child has abilities" / "My child lacks abilities"; and d = "The tasks are too easy for my child" / "The tasks are too difficult for my child") (Study I), or to assess the influence of their child's ability (i.e., "My child has abilities" / "My child lacks abilities"; Study II) with a 5-point Likert-type scale (1 = no influence at all; and 5 = very much influence). In Study III, the parents were asked what the primary cause of their child's success was and they answered by rating four items (a = "The child tried hard"; b = "The child has got talent"; c = "The assignment was easy"; d = "The child received help") on a 5-point Likert-type scale (1 = not at all; 5 = very much).

In Studies II and III, the same measurements were used at all measurement points. In Study I, four statements concerning performance in reading (e.g., "If my child does well on some reading-related school assignment, it is probably because...") and mathematics (e.g., "If my child does not know

how to do some mathematics assignment, it is probably because...”) were added to the ninth grade questionnaire. On the basis of the parents’ answers, a mean score was calculated for attributions to ability, effort, teaching and task difficulty in Studies I and III, and for ability attribution in Study II, separately for success and failure situations and separately for mothers and fathers. The rank-order scores in Study I were reversed so that larger values indicated a higher importance regarding the causal attribution in question.

### 2.3 Statistical analysis

To examine the mean-level stability in parental causal attributions from first grade through ninth grade, the statistical difference between the means of the parental causal attributions were investigated across the two measurement points in Study I. Furthermore, on the basis of the mean values and standard deviations of parental causal attributions reported in Study I, effect sizes (Cohen’s *d*; Cohen, 1992) regarding the changes were calculated:

$$d = (M_2 - M_1) / \sigma_{\text{pooled}}, \text{ where } \sigma_{\text{pooled}} = \sqrt{[(\sigma_1^2 + \sigma_2^2)/2]}.$$

In order to identify subgroups of mothers and fathers who show different profiles on the basis of the mean level of their ability attributions regarding their child’s successes and failures over the child’s first three school years, a latent profile analysis was conducted (Study II). The determined profiles were based on the mean values of the observed variables across all three measurement points (child’s 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> grade). The models were estimated by using the Mplus statistical software program (Version 7; Muthén & Muthén, 1998–2012).

Interindividual stability in parental causal attributions was examined by determining the correlation coefficients between parents’ causal attribution at Grade 1 and the corresponding attribution at Grade 9 (Study I). The correlation coefficients (*r*) were further transformed into coefficients of determination (*r*<sup>2</sup>).

To study the intraindividual stability, the extent of within-level variance, that is, variance between days, in parental causal attributions was identified with multilevel modeling that was conducted for the diary data over 14 days (7 days in the Fall and 7 days in the Spring semester; Study III). The within-person level specifies that each person’s score for a certain variable is composed of his or her average score plus the deviation of that score from his or her mean score over a certain number of days (Bolger et al., 2003). Intraclass-correlation coefficients (ICC) were calculated to determine what proportion of the variance in the observed variables was due to the differences experienced by each individual on different days (within-person variation) and what was due to differences between individuals (between-person variation). The ICC value varies between .00 and 1.00, and it shows the proportion of variation between individuals. Thus, the within-person variation is 1 - ICC.

### 3 RESULTS

First, the mean-level and interindividual stabilities in parents' ratings of the role of ability, effort, teaching and task difficulty in their child's success and failure situations were studied over the children's nine-year period of comprehensive school attendance (Study I). Second, the mean level of parents' ability attribution during their child's first three school years was examined further, using a person-oriented approach (Study II). Third, the intraindividual stability and variation in parents' causal attributions for their child's successes was studied over two one-week periods during their child's first school year (Study III). The results are summarized in Table 3 and described here, one causal attribution at a time.

#### 3.1 Ability

Study I showed, first, that parents' assessment of the importance of ability attribution in success and failure situations did not change at the mean level from their child's first to ninth grade. In the person-oriented examination of the ability attribution, five profiles were identified on the basis of the mean levels during the children's first, second and third school year (Study II). The identified profiles were similar for both mothers and fathers, and were differentiated in particular by the mean-level differences in the ability attributions. The changes in the parents' mean levels during the three-year study period merely intensified the differences in mean levels between the profiles.

Study I further showed that individual differences in the parents' importance rating of ability attribution in success situations during their child's first grade explained 27% of the corresponding differences during the ninth grade among mothers and 16% among fathers, but in failure situations only 6% among mothers and 12% among fathers. Finally, Study III showed that 67% of the total variation evident in the mothers' ability attribution concerning success

situations, and 57% of the fathers', was related to variation within the individual parents (i.e., between days), and only 33% and 43%, respectively, was due to differences between the individuals (i.e., between parents).

### **3.2 Effort**

Study I showed, first, that parents' assessment of the importance of effort attribution in success and failure situations did not change at the mean level from their child's first to ninth grade. Second, individual differences in the importance rating of effort attribution in success situations during the first grade explained 18% of the corresponding differences during the ninth grade among mothers and 6% among fathers. In failure situations, the percentages were respectively 1% among mothers and 11% among fathers. The correlation between mothers' effort attribution for failures in their child's first and ninth grade was not statistically significant. Finally, Study III showed that 66% of the total variation evident in the mothers' effort attribution concerning success situations, and 61% of the fathers', was related to variation within the individual parents (i.e., between days), and only 34% and 39%, respectively, was due to differences between the individuals (i.e., between parents).

### **3.3 Teaching**

Study I showed, first, that mothers' assessment of the importance of the teaching attribution in success situations slightly decreased from their child's first to ninth grade. However, the importance did not change with regard to mothers' teaching attribution in failure situations or fathers' teaching attribution both in success and failure situations. Second, individual differences in the importance rating of parents' teaching attribution during the children's first grade explained 25% of the corresponding differences during the ninth grade among mothers and only 3% among fathers. In failure situations, the percentages were respectively 5% among mothers and 16% among fathers. The correlation between fathers' teaching attribution for successes during their children's first and ninth grade was not statistically significant. Finally, Study III showed that 76% of the total variation evident in the mothers' teaching attribution, and 72% of the fathers', was related to variation within the individual parents (i.e., between days), and only 24% and 28%, respectively, was due to differences between the individuals (i.e., between parents).



### 3.4 Task difficulty

Study I showed, first, that mothers' assessment of the importance of the task difficulty attribution in success situations increased slightly from their child's first to ninth grade, whereas fathers' mean level did not change. In failure situations, the importance slightly increased both among mothers and fathers. Second, individual differences in the importance rating of the task difficulty attribution during the children's first grade explained 18% of the differences during the ninth grade among mothers and 12% among fathers. In failure situations, the percentages were respectively 8% among mothers and 12% among fathers. Finally, Study III showed that 77% of the total variance evident in the mothers' task difficulty attribution, and 63% of the fathers', was related to variation within the individual parents (i.e., between days), and only 23% and 37%, respectively, was due to differences between the individuals (i.e., between parents).

TABLE 3 Summary of the results: Effect sizes regarding mean-level stability, coefficient of determinations for interindividual stability, and intraclass correlations determining intraindividual stability.

	Causal attribution							
	Success				Failure			
	Ability	Effort	Teaching	Task difficulty	Ability	Effort	Teaching	Task difficulty
Mean-level stability <sup>a</sup>								
Mothers	-.01	.13	-.34***	.30**	.03	-.06	-.23*	.29**
Fathers	.16	-.13	-.11	.19	.02	-.08	-.21*	.32*
Interindividual stability <sup>b</sup>								
Mothers	.27***	.18***	.25***	.18***	.06**	.01	.05*	.08**
Fathers	.16***	.06*	.03	.12**	.12**	.11**	.16***	.12**
Intraindividual stability <sup>c</sup>								
Mothers	.67	.66	.76	.77	-	-	-	-
Fathers	.57	.61	.72	.63	-	-	-	-

<sup>a</sup> Cohen's d. Small effect = .20; medium effect = .50; large effect = .80. The asterisks refer to the statistical significance between the first grade and ninth grade means reported and tested in Study I. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

<sup>b</sup> Coefficient of determination:  $r^2$ . The asterisks refer to the statistical significance of the correlation between the first grade and ninth grade measures reported in Study I. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

<sup>c</sup> The proportion of variation within individuals (i.e., between days;  $1 - ICC$ ) reported in Study III.

## 4 DISCUSSION

This research focused on investigating the mean-level, interindividual and intraindividual stabilities in parents' causal attributions to ability, effort, teaching and task difficulty for their child's successes and failures in learning situations. For this purpose, three studies were conducted. The findings of these studies are discussed here: first, separately for different types of stability and then all together with concluding remarks. In between, the strengths and limitations of the studies are assessed with some proposals for future research.

### 4.1 Mean-level stability

The mean-level changes in parents' importance ratings of the roles of ability, effort, teaching and task difficulty in their children's success and failure situations throughout the children's comprehensive school education were rather small. The biggest changes occurred in teaching and task difficulty attributions, but the effect sizes related to these changes were still clearly below what is considered to be medium effect size. This relatively high mean-level stability in parental causal attributions supports the notion of attribution styles that feature the tendency to repeatedly make similar kinds of causal attributions (Weiner, 1992). The present research adds to this by showing that parents not only make similar kind of attributions, but also rank the importance of ability, effort, teaching and task difficulty similarly at the level of the whole sample whether their child is first or ninth grade.

Regarding external attributions, the rather small changes at the mean level suggest that parents attribute less importance to teaching and more to task difficulty for their child's performance as the child ages. The changes in the teaching attribution are somewhat in line with previous theories suggesting that as a child ages, the parents attribute more personal responsibility to the child and perceive the teacher's role in the child's performance to be less influential (Dix et al., 1986, 1989; Gretarsson & Gelfand, 1988). The increase in

parents' task difficulty attribution may reflect the objective changes in their child's education since the tasks provided at school become more difficult from grade to grade. However, the task difficulty attribution also increased with regard to successful situations, indicating that in parents' opinion, the ease of tasks is an increasingly important factor in their child's success with age. One possible reason for this finding is that parents assess task difficulty in relation to their child's ability: if the child has a high level of ability, the tasks are seen to be easy for the child, while the same task may be considered difficult if the child lacks ability. Further, some parents may think that the teacher offers tasks that are simply not very demanding in relation to students' abilities, or that their child's ability has developed faster than the difficulty level of the tasks at school.

The person-oriented inspection of the mean-level stability in parents' ability attribution revealed that parents differ in particular with regard to the *level* of how influential they believe ability is as an explanation for their child's success and failure at school, not in regard to *changes* in the level. Theoretically, it might have been possible to find groups of parents with stable, increasing or decreasing ability attribution levels. However, the changes that were evident in the mean level only intensified the level differences between the profiles. These results may reflect parents thinking in terms described in the entity theory of intelligence (Dweck, 2000), in which ability is seen as a fixed trait that does not change regardless of the child's age or practice. Even though the level of a child's skills and knowledge increases over the school years, the parents may assess ability on the basis of their view of the innate limit in the child's intelligence. This view can be formed on the basis of the parents' own abilities and beliefs. At the beginning of a child's school career, when the parents start to receive information about their child's performance also in comparison to other children, the parents may adjust their view. However, parents tend to be rather set in their views already during their child's first grade in school, and their views remain quite stable over the years.

Regarding effort, both parents tend to begin to perceive it as less important over time in respect to failure situations. This may reflect a rather fixed view of their child's abilities, a view that parents form over their child's comprehensive school years: the child cannot outperform his or her own abilities, regardless of the amount of effort he or she may put into a task, and thus the perceived importance of effort decreases over time. However, mothers still seem to think that the effort their child puts into a task is more central to the child's success in ninth grade than in the first grade. This may reflect an increase in the personal responsibility mothers give their child as they age: in the first grade, teachers' guidance is central, but by the ninth grade the child should be able to control his or her own performance.

## 4.2 Interindividual stability

While the mean-level results imply relatively high stability, the interindividual stabilities were modest. It was possible to explain, on average, 22% of the individual differences among the mothers' and 9% of the individual differences among the fathers' causal attributions for their children's success situations in the ninth grade with the corresponding causal attribution they had made during the children's first grade. Respectively, the percentages regarding failure situations were 5% (mothers) and 13% (fathers). In other words, most of the variation between parents regarding their importance ranking of the four causal attributions depended on factors other than the corresponding causal attribution they had made during their children's first grade.

Even though the interindividual stabilities were quite low in terms of the effect size, the positive relations between the causal attributions made during the ninth grade and first grade were statistically significant regarding almost all of the attributions. The only exceptions to this were the fathers' teaching attribution in success situations and the mothers' effort attribution in failure situations. Moreover, considering the eight-year time lapse between the two measurements, the interindividual stability in parental causal attributions can be considered to be surprisingly high. Over the nine years of comprehensive school, children develop tremendously in regard to many different aspects, both physically and psychologically. It can be assumed that at the beginning of the children's early school education, when the parental causal attributions were first measured, parents rated their causal attributions mostly based on their own beliefs and experiences as they did not yet have much information regarding their child's academic abilities. However, during the later school years, parents increasingly received information concerning, for example, their child's capabilities, progress and performance in comparison to other children, which is likely to subsequently have affected the parents' views. Such information probably alters parents' views to be more realistic with regard to their children's actual capabilities and disposition, and thus can affect parental causal attributions drastically. However, up to 27% of the variation (which was the case regarding mothers' ability attribution in success situations) can be explained with their view eight years earlier.

The interindividual stability in parental causal attributions may be explained by the notion that parents tend to rely on their general conception of their child's competence in particular contexts (Miller, 1995), or on their previous attributional patterns that they are accustomed to when the situation itself does not provide an explanation for the event (Bugental et al., 1998; Peterson & Steen, 2009). In addition, the stability may be related to the extent to which parents employ attributional biases. The stability of such tendencies is also likely to be reflected in the stability of interpersonal differences in causal attributions that parents make for their children's successes and failures. It could further be argued that the interindividual stability in parental causal attributions reflects some stable interindividual differences in the children.

However, Study I showed that parental causal attributions display interindividual stability even after controlling for the child's level of performance, which is considered to be one of the major antecedents of parental causal attributions (Hess & McDevitt, 1986; Holloway & Hess, 1985; Miller, 1995; Natale et al., 2008; Rytönen et al., 2005).

The results showed further that interindividual stability was stronger with respect to the mothers' causal attributions in situations of success than in the case of fathers, whereas in situations of failure the inverse was true. These results suggest that mothers are more likely to form stable evaluations of their children on the basis of successful results, whereas fathers will be more likely to base their later evaluations on their child's past failures. It may be that fathers are typically less involved than mothers in their child's school performance and may be informed only when the child performs poorly. Thus, fathers may not have experiences of their child's successes and therefore are not able to form a stable way of attributing these. In this sense, it could be interpreted that parental causal attributions reflect the parents' own experiences with their child and the child's school environment.

### **4.3 Intraindividual stability**

The results concerning the intraindividual stability add to the previous discussion of the mean-level and interindividual stability that, on average, 72% of the total variation in mothers' causal attributions and 63% of the total variation in fathers' causal attributions was variation between different days (intraindividual). Consequently, approximately only one third of the variation was due to differences between parents. This result shows that, in accordance with the approach describing causal attributions as flexible constructs (Bugental & Happaney, 2002), parental causal attributions can vary significantly from one day to another. Thus, it can be assumed that the attributions are highly dependent on the context.

When parents attribute their children's success, in everyday life situations, they have multiple plausible causes to choose from. Prior studies have shown that the choice parents make may originate, for example, from factors related to the situation itself, such as how expected or surprising the outcome was, whether or not there were other people involved, and how much information they had regarding the situation (Weiner, 1992). Furthermore, the choice is also related to other factors concerning the parent, such as how the parent feels in each situation (Bolton et al., 2003; Jackson et al., 2001). For example, Study III showed that the daily variation in parental causal attributions was associated with the daily variation in parents' positive emotions: the more positive the emotions were that mothers and fathers experienced in a particular situation, the more they attributed their child's success to ability and effort. Thus, it is no wonder that parental causal attributions vary significantly from one situation to another, because situations and feelings vary significantly with regard to the

dynamic and changing parent-child interactions in everyday life (Cox & Paley, 1997).

As approximately two thirds of the total variation was due to variation between days (intraindividual), the remaining one third was evidently between individuals. This finding supports the results concerning mean-level and interindividual stabilities by showing that in addition to day-to-day variability, there is also variation between parents, that is, parents have comparatively different ways of attributing their child's success in learning situations. This may be due to their different attributional styles and other factors causing stability in interindividual differences, as discussed earlier.

#### **4.4 Strengths, limitations, and future directions**

This research is unique in the sense that it is the first to combine the research on mean-level, interindividual and intraindividual stabilities in parents' causal attributions for their children's performance outcomes. Furthermore, the previous studies on mean-level and interindividual stabilities in parental causal attributions have focused only on the early years of school. Study I was the first longitudinal study to cover children's whole comprehensive school education. However, in that study, mean-level and interindividual stabilities were examined between only two fairly distant time points, that is, first grade and ninth grade. Consequently, there is an evident need to more closely examine the dynamics in the stability of parental causal attributions by applying more frequent measurements throughout the nine-year period of comprehensive school. This was partly undertaken with regard to parents' ability attribution in Study II, which focused on the mean-level differences between different subgroups of parents during children's first, second and third school year. In future, a person-oriented approach should also be applied regarding other causal attributions in order to compare the developmental trajectories of different causal attributions. Furthermore, studying the changes in all causal attributions at the same time by putting them all into one model would yield more specific information regarding the relations between different attributions. For example, an increase in parents' ability attribution may be related to an increase in their task easiness attribution in their children's success situations, since tasks may be seen to be easier for students with high abilities. Respectively, an increase in the ability attribution may be related to a decrease in the effort attribution, since parents may think that a child who has high abilities does not have to try hard as he or she is already highly able.

There are at least three methodological limitations that may have led to an overestimation of the mean-level and interindividual stabilities in the parents' causal attributions. First, the research focused on four predetermined causal attributions: ability, effort, teaching, and task difficulty. They are well-suited as causes of performance outcomes, but other causal attributions, such as mood and luck, are also often expressed in the learning context (Weiner, 1992). A



prior study has also shown that mothers at times also spontaneously make other kinds of causal attributions, such as interest and task familiarity (Jaworski & Hubert, 1994). Second, parental causal attributions have often been domain-specific, whereas Studies I and II concerned children's general school performance. Third, in Study I, parents were requested to rank-order the four causal attributions according to their importance, whereas in Studies II and III they could rate each attribution separately. Thus, in Study I, the evaluation of one causal attribution was dependent on the evaluation of the others.

Study III was the first study, to my knowledge, attempting to differentiate between within person and between person variations in parents' causal attributions for their children's success. Questions regarding the children's failure situations were also included in the parental questionnaire: during the 14-day study period, approximately 37% of the mothers and 16% of the fathers questioned reported at least two failure situations. However, this was not sufficient in order to analyze the variation in parental causal attributions for the children's failures.

In Study III, parents were allowed to attribute causes to any situation they felt their child succeeded in during the day. Thus, parents reported situations regarding not only academic performance such as in exams and homework, which was the case in Studies I and II, but also relating to hobbies and housework, for example. This made it possible to receive more data regarding parental causal attributions for their children's successes because the parents seized more opportunities for witnessing success on a daily basis, including weekends when school-related tasks are rare. However, the variation in parental responses may have led to higher intraindividual variation, hence lower intraindividual stability, compared to when attributions are made solely for academic performance. Thus, the results concerning intraindividual stability should be replicated by studying causal attributions separately in respect to academic performance. In addition, asking more information regarding the situation at hand, such as the degree of success or the importance of succeeding, would provide a more specific understanding of the effects of situation-specific features on parental causal attributions.

Conducting the studies in only one country, Finland, exposes further limitations. Finland's relatively egalitarian culture might be an influential factor regarding the stability of parents' causal attributions, since it creates a safe, steady environment for both the parents and children. For instance, up until the end of the ninth grade, academic competitiveness in the Finnish education system is relatively low compared to educational systems in many other nations. Another cultural aspect that may be related to the stabilities might stem from certain child-rearing goals and practices inherent in Finnish culture. Finnish parents typically aim to raise their children to be trustworthy and hardworking and to believe in their own abilities, with less emphasis placed on being obedient or becoming particularly influential, successful, respected, or smart (Tulviste & Ahtonen, 2007; see also Laukkanen et al., 2014). Because these kinds of child-rearing practices are bound up in the culture, it can be assumed that they persist and change slowly over the years and are thus reflected in the



results for stability in this research. In addition, prior research has shown some cultural differences in parental causal attributions (Phillipson, 2006; Stevenson & Stigler, 1992; Weiner, 1992). Consequently, some of the results could differ if the same study were to be conducted in a different sociocultural context.

There are also two aspects regarding the samples used in this research that should be taken into account when generalizing the findings. First, all of the samples were comprised of individuals with, on average, a higher level of education than the Finnish population in general. Prior studies have shown that the higher the parents' education, the more they attribute their child's success to ability (Natale et al., 2008; Phillipson, 2006; Rytönen et al., 2005; Rätty, Kasanen, & Honkalampi, 2006). Highly educated parents also seem to show a stronger child-serving bias (Kärkkäinen et al., 2011; Rätty, Kasanen, & Honkalampi, 2006). Thus, the importance ratings may yield different kinds of results also in Finnish samples consisting of parents with a lower level of education. Second, the featured studies covered both mothers and fathers. The results showed that while mean-level and intraindividual stabilities are rather similar among mothers and fathers, there are some differences in their interindividual stabilities. In addition, a selection effect was found among fathers, in Study I: children whose fathers did not return the questionnaire in ninth grade had a lower grade point average than the children whose fathers returned the questionnaire. Thus, the phenomenon differs somewhat between mothers and fathers, and hence they should be studied separately in future studies as well. Moreover, as this research focused only on mothers' and fathers' causal attributions, there is an evident need for future research that also examines the attributions of other people of significance for the child, such as teachers and peers. It has been suggested, for example, that congruence between parents' and teachers' causal attributions regarding a child's achievement better supports the development of the child's academic skills than would conflicting views between the parents and teachers (Peet, Powell, & O'Donnell, 1997).

Overall, the present research has shown that various kinds of changes occur naturally in parental causal attributions, but the consequences of these changes concerning parents' behavior, other beliefs, and children's development and performance were not studied. Thus, further research regarding the antecedents and consequences of change and stability in parental causal attributions is needed. For instance, in Study I, a considerable proportion of the interindividual variation in parents' causal attributions during their children's later school years was not explained by the causal attribution these parents had made during their children's early elementary school years, nor by the children's level of performance. Consequently, future studies should look more closely at what kinds of factors explain interindividual changes in parental causal attributions over time. Prior studies have shown that, for example, other kinds of parental beliefs and behavior, such as parenting practices (Coplan, Hastings, Lagacé-Séguin, & Moulton, 2002; Rytönen et al., 2005) and parents' expectations of their children's academic outcomes (Miller, 1995), are related to parental causal attributions, and may thus also explain changes in the attributions.

## 4.5 Concluding remarks

This research focused on the mean-level, interindividual and intraindividual stability in parents' causal attributions to ability, effort, teaching and task difficulty for their children's learning outcomes. The mean-level and interindividual stabilities were studied across the children's entire comprehensive school education, while intraindividual stability was examined during the children's first grade. Overall, the results of the present research suggest high mean-level stability, moderate interindividual stability and low intraindividual stability in parental causal attributions. Mothers' and fathers' causal attributions showed equal mean level and intraindividual stability, but the interindividual stability of mothers' causal attribution was stronger concerning their children's successes while the interindividual stability of fathers' causal attribution was stronger with regard to their children's failure.

More specifically, the results suggest that parents' internal (ability and effort) and external (teaching and task difficulty) attributions change differently over time, although they all showed high variation from one day to another. Attributing children's performance outcome to ability and effort seemed to be a characteristic feature and the importance assessment of those attributions did not change over time, that is, these attributions had a high mean-level stability. By contrast, the overall levels of attributing the children's outcomes to teaching and task difficulty changed over time, suggesting that these attributions may be more context-dependent. These attributions may, for example, be related to the children's age and the objective changes in the school environment. However, the interindividual stability showed a somewhat different pattern as no differences between internal and external attributions were found. Instead, the results concerning interindividual stability suggest that it is relevant to take the parents' gender into account as well as whether a parent's causal attribution is being made for his or her child's success or failure. Overall, these results add to our understanding of the long-term stability of parental causal attributions from children's start to finish of their comprehensive school education, as well as of the day-to-day variation in the parents' causal interpretations regarding their child's performance in various learning situations.

## YHTEENVETO (SUMMARY)

### **Pysyvyys ja vaihtelu vanhempien lapsensa oppimissuoriutumista koskevissa syyselityksissä**

Tässä tutkimuksessa tarkasteltiin vanhempien lapsensa oppimistilanteissa suoriutumista koskevien syyselitysten pysyvyyttä. Tutkimus kohdistui vanhempien arvioihin neljän eri syyselityksen tärkeydestä lapsen onnistumisen tai epäonnistumisen selittäjänä: lapsen kyvykkyys, tilanteeseen käytetyn yrityksen määrä, opettajan tai vanhemman antama opetus ja apu sekä suoritettavan tehtävän vaikeus. Vanhempien lapsen suoritusilanteita koskevien syyselitysten pysyvyyden voidaan olettaa olevan keskeinen tekijä vanhemman ja lapsen välisen vuorovaikutuksen ja siten myös lapsen kehityksen kannalta. Syyselitykset nimittäin ohjaavat vanhemman toimintaa: ne vaikuttavat vanhemman odotuksiin lasta kohtaan sekä lapselle annettavan tuen ja ohjauksen määrään (Murphey, 1992). Esimerkiksi lapsen onnistumisen selittäminen lapsen kyvyillä vahvistaa lapsen luottamusta itseensä ja omaan pystyvyyteensä jopa enemmän kuin lapsen saamat kouluarvosanat (Frome & Eccles 1998; Rytönen, Aunola & Nurmi, 2007). Sen sijaan onnistumisen selittäminen esimerkiksi tehtävän helpoudella riistää lapselta kunnian hyvästä suorituksesta. Vastaavasti vanhemman tarjoama syy lapsen epäonnistumiselle voi olla lapselle joko positiivinen tai negatiivinen viesti. Jos vanhempi uskoo lapsen epäonnistumisen johtuvan yrityksen puutteesta, vanhempi osoittaa lapselle tämän pystyvän vaikuttamaan itse omaan suoriutumiseensa ja siten kannustaa lasta olemaan ahkera ja lannistumaton. Toisaalta epäonnistumisen selittäminen kyvyttömyydellä viestii lapselle hänen olevan ”toivoton tapaus”, jolloin lapsen ei kannata edes yrittää, kun kyvyt eivät vain riitä. Erityisesti pysyvät syyselitykset ohjaavat lapsen kehitystä suuntaan, joka voi selityksestä riippuen olla lapselle joko hyödyllinen tai haitallinen. Sen sijaan satunnaiset, usein vaihtuvat syyselitykset antavat lapselle vaihtuvaa palautetta hänen suoriutumisestaan. Näin syyselitysten vaikutus lapsen kehitykseen ei ole yhtä suoraviivainen.

Tässä tutkimuksessa syyselitysten pysyvyyttä tarkasteltiin kolmessa eri osatutkimuksessa kolmesta eri näkökulmasta. Ensimmäinen ja toinen osatutkimus selvittivät keskiarvotason pysyvyyttä, joka viittaa tietyille syyselitykselle annettujen tärkeyden tasojen yhdenmukaisuuteen eri mittauskertojen välillä. Ensimmäisessä osatutkimuksessa keskiarvotason muutosta tutkittiin ryhmätasolla, jolloin keskiarvoon laskettiin mukaan kaikkien osallistujien arviot kyvyn, yrityksen, opetuksen ja tehtävän vaikeuden tärkeydestä lapsen ollessa ensimmäisellä ja yhdeksännellä luokalla. Toinen osatutkimus keskittyi vain kykyelitykseen, ja sen tavoitteena oli luokitella vanhempia heidän henkilökohtaisen keskiarvonsa perusteella ryhmiin siten, että samassa ryhmässä olevien vanhempien keskiarvot olisivat mahdollisimman samanlaisia lapsen ensimmäisen, toisen ja kolmannen kouluvuoden aikana. Ensimmäisessä osatutkimuksessa tarkasteltiin myös suhteellista pysyvyyttä, joka tarkoittaa yhdenmukaisuutta vanhempien järjestyksessä kahtena tai useampana ajankohtana, kun vanhem-

mat järjestetään heidän antamansa syyselityksen tärkeysarvion suuruuden perusteella. Kolmannessa osatutkimuksessa pyrittiin erottamaan toisistaan vanhempien välinen ja vanhempien sisäinen, ts. päivästä toiseen tapahtuva vaihtelu ja selvittämään, miten paljon vanhempien syyselitykset vaihtelevat tilanteesta toiseen päivittäisessä elämässä lapsen kanssa.

Tutkimuksessa hyödynnettiin kolmea eri aineistoa. Ensimmäisessä osatutkimuksessa käytettiin Koulutaidot ja motivaatio -tutkimuksen (Jyväskylä Entrance into Primary School, JEPS; Nurmi & Aunola, 2016) aineistoa. Tutkimusjoukkona oli noin 200 lasta ja heidän vanhempansa lapsen ensimmäisen ja yhdeksännen luokan aikana. Toinen osatutkimus perustui Alkuportaattutkimukseen (Lerkanen ym., 2016), jossa yli 1 700 lasta ja heidän vanhempaansa seurattiin ensimmäiseltä luokalta kolmannelle luokalle. Kolmas osatutkimus koostui 162 lapsesta ja heidän vanhemmistaan, joita seurattiin Vanhemmat, lapset ja oppiminen -tutkimuksessa (VALO; Aunola, Nurmi, & Viljaranta, 2016) lapsen ensimmäisen kouluvuoden ajan.

Ensimmäisen osatutkimuksen tulokset osoittivat, että keskiarvotason muutokset vanhempien lapsensa onnistumisia ja epäonnistumisia koskevissa syyselityksissä olivat vähäisiä. Selvin muutos tapahtui opetuksen ja tehtävän vaikeuden merkitsevyyden arvioissa: opetuksen merkitys väheni ja tehtävän vaikeuden merkitys lapsen suoriutumisen selittäjänä kasvoi. Kykyselityksen tarkempi tarkastelu toisessa osatutkimuksessa osoitti, että vanhemmat eroavat toisistaan erityisesti sen perusteella, miten paljon he uskovat lapsen suoriutumisen johtuvan lapsen kyvyistä tai kykyjen puutteesta, eivätkä sen perusteella, millaisia muutoksia kyvyn merkittävyyden arvioissa tapahtuu lapsen kolmen ensimmäisen kouluvuoden aikana.

Ensimmäinen osatutkimus osoitti lisäksi, että vanhempien syyselityksissä on havaittavissa suhteellista pysyvyyttä pois lukien äitien yritys-selitys epäonnistumistilanteissa ja isien opetus-selitys onnistumistilanteissa. Lisäksi havaittiin, että äidit selittivät lapsensa onnistumisia ensimmäisellä ja yhdeksännellä luokalla todennäköisemmin samalla syyllä kuin isät, kun taas isät selittivät lapsensa epäonnistumisia molempina ajankohtina todennäköisemmin samalla syyllä kuin äidit.

Päivittäistä vaihtelua tarkasteleva kolmas osatutkimus osoitti, että suurin osa syyselityksissä havaitusta vaihtelusta aiheutui siitä, että vanhemmat arvotavat tutkitut syyt eri onnistumistilanteissa eri tavoin. Siten pienempi osa vaihtelusta johtui vanhempien välisistä eroista. Vanhemmilla ei siis näyttäisi olevan selkeää tapaa selittää lapsen suoriutumista aina samalla tavalla, vaan vanhempien syyselitykset vaihtelevat päivästä toiseen.

Kaiken kaikkiaan tämä tutkimus osoitti, millaisia muutoksia tapahtuu vanhempien lapsensa suoriutumista koskevissa syyselityksissä keskiarvotasolla, suhteessa muihin vanhempiin ja päivittäisessä vuorovaikutuksessa lapsen kanssa. Keskiarvotason muutoksiin liittyvien tulosten perusteella näyttää siltä, että vanhemmille on luonteenomaista selittää lapsen suoriutumista kyvyllä ja yrityksellä yhtä paljon riippumatta lapsen iästä, kun taas suoriutumisen selittäminen opetuksella ja tehtävän vaikeudella näyttää riippuvan enemmän tilan-

netekijöistä. Suhteellisen pysyvyyden osalta näyttäisi sen sijaan olevan olennaista erottaa toisistaan äitien ja isien arviot sekä onnistumis- ja epäonnistumistilanteet yksittäisen syyselityksen pysyvyyden arvioimisen sijaan. Päivittäinen vaihtelu puolestaan näyttäisi olevan yhtä suurta jokaisen tutkitun syyselityksen osalta. Tämän tutkimuksen jälkeen olisi perusteltua selvittää, mistä havaitut muutokset syyselitysten tärkeyden arvioinneissa johtuvat ja mitä seurauksia syyselitysten pysyvyydellä ja muutoksilla on lapsen kehityksen kannalta.

## REFERENCES

- Ames, C. & Archer, J. (1987). Mothers' beliefs about the role of ability and effort in school learning. *Journal of Educational Psychology, 79*, 409–414.
- Antaki, C. (1982). A brief introduction to attribution and attributional theories. In C. Antaki & C. Brewin (Eds.), *Attributions and psychological change: Applications of attributional theories to clinical and educational practice* (pp. 3–21). New York: Academic Press.
- Asendorpf, J. B. (1992). Beyond stability: Predicting inter-individual differences in intra-individual change. *European Journal of Personality, 6*, 103–117.
- Aunola, K., Nurmi, J.-E., & Viljaranta, J. (2016). *The LIGHT study*. Jyväskylä: University of Jyväskylä. Retrieved from <https://www.jyu.fi/ytk/laitokset/psykologia/en/research/research-areas/motivation-and-learning/projects/light>
- Bergman, L. R. & Magnusson, D. (1991). Stability and change in patterns of extrinsic adjustment problems. In D. Magnusson, L. R. Bergman, G. Rudinger, & B. Törestad (Eds.), *Problems and methods in longitudinal research: Stability and change* (pp. 323–346). Cambridge: Cambridge University Press.
- Bergman, L. R., Magnusson, D., & El-Khoury, B.-M. (2003). *Paths through life, Vol. 4: Studying individual development in an interindividual context: A person-oriented approach*. Mahwah, NJ: Erlbaum.
- Bird, J. E. & Berman, L. S. (1985). Differing perceptions of mothers, fathers, and children concerning children's academic performance. *Journal of Psychology: Interdisciplinary and Applied, 119*, 113–124.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579–616.
- Bolton, C., Calam, R., Barrowclough, C., Peters, S., Roberts, J., Wearden, A., & Morris, J. (2003). Expressed emotion, attributions and depression in mothers of children with problem behaviour. *Journal of Child Psychology and Psychiatry, 44*, 242–254.
- Bugental, D. B. & Happaney, K. (2002). Parental attributions. In M. H. Bornstein (Ed.), *Handbook of parenting, Vol. 3: Being and becoming a parent* (2nd ed., pp. 509–535). Mahwah, NJ: Erlbaum.
- Bugental, D. B., Johnston, C., New, M., & Silvester, J. (1998). Measuring parental attributions: Conceptual and methodological issues. *Journal of Family Psychology, 12*, 459–480.
- Cashmore, J. A. & Goodnow, J. J. (1986). Parent-child agreement on attributional beliefs. *International Journal of Behavioral Development, 9*, 191–204.
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.
- Coplan, R. J., Hastings, P. D., Lagacé-Séguin, D. G., & Moulton, C. E. (2002). Authoritative and authoritarian mothers' parenting goals, attributions, and emotions across different childrearing contexts. *Parenting Science and Practice, 2*, 1–26.



- Cote, L. R. & Azar, S. T. (1997). Child age, parent and child gender, and domain differences in parents' attributions and responses to children's outcomes. *Sex Roles, 36*, 23-50.
- Cox, M. J. & Paley, B. (1997). Families as systems. *Annual Review of Psychology, 48*, 243-267.
- Dix, T. & Grusec, J. (1985). Parent attribution processes in the socialization of children. In I. E. Sigel (Ed.), *Parental belief systems: The psychological consequences for children* (pp. 201-233). Hillsdale, NJ: Erlbaum.
- Dix, T., Ruble, D. N., Grusec, J. E., & Nixon, S. (1986). Social cognition in parents: Inferential and affective reactions to children of three age levels. *Child Development, 57*, 879-894.
- Dix, T., Ruble, D. N., & Zambarano, R. J. (1989). Mothers' implicit theories of discipline: Child effects, parent effects, and the attribution process. *Child Development, 60*, 1373-1391.
- Dunton, K. J., McDevitt, T. M., & Hess, R. D. (1988). Origins of mothers' attributions about their daughters' and sons' performance in mathematics in sixth grade. *Merrill-Palmer Quarterly, 34*, 47-70.
- Dweck, C. (2000). *Self-theories: Their role in motivation, personality, and development*. Philadelphia, PA: Taylor & Francis.
- Eccles, J. S., Jacobs, J. E., & Harold, R. D. (1990). Gender role stereotypes, expectancy effects, and parents' socialization of gender differences. *Journal of Social Issues, 46*, 183-201.
- Fiske, S. & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill.
- Forgas, J. & Locke, J. (2005). Affective influences on causal inferences: The effects of mood on attributions for positive and negative interpersonal episodes. *Cognition and Emotion, 19*, 1071-1081.
- Frome, P. M. & Eccles, J. S. (1998). Parents' influence on children's achievement-related perceptions. *Journal of Personality and Social Psychology, 74*, 435-452.
- Georgiou, S. N. (1999). Parental attributions as predictors of involvement and influences on child achievement. *British Journal of Educational Psychology, 69*, 409-429.
- Gretarsson, S. J. & Gelfand, D. M. (1988). Mothers' attributions regarding their children's social behavior and personality characteristics. *Developmental Psychology, 24*, 264-269.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Hess, R. D. & McDevitt, T. M. (1986). Some antecedents of maternal attributions about children's performance in mathematics. In R. D. Ashmore & D. M. Brodzinsky (Eds.), *Thinking about the family: Views of parents and children*. Hillsdale, NJ: Erlbaum.
- Holloway, S. D. (1986). The relationship of mothers' beliefs to children's mathematics achievement: Some effects of sex differences. *Merrill-Palmer Quarterly, 32*, 231-250.
- Holloway, S. D. & Hess, R. D. (1985). Mothers' and teachers' attributions about children's mathematics performance. In E. S. Irving (Ed.), *Parental belief*

- systems: *The psychological consequences for children* (pp. 177–199). Hillsdale, NJ: Erlbaum.
- Holloway, S. D., Kashiwagi, K., Hess, R. D., Azuma, H. (1986). Causal attributions by Japanese and American mothers and children about performance in mathematics. *International Journal of Psychology, 21*, 269–286.
- Ikäheimo, H. (1996). *Matematiikan keskeisten käsitteiden diagnoosi [Diagnostic test for basic mathematical concepts]*. Helsinki: OPPERI.
- Jacobs, J. E. & Eccles, J. S. (1992). The impact of mothers' gender-role stereotypic beliefs on mothers' and children's ability perceptions. *Journal of Personality and Social Psychology, 63*, 932–944.
- Jaworski, T. M. & Hubert, N. C. (1994). Mother's attributions for their children's cognitive abilities. *Infant Behavior & Development, 17*, 265–275.
- Jones, E. E. & Davis, K. E. (1965). From acts to dispositions: The attribution process in person perception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 219–266). New York: Academic Press.
- Jones, E. E. & Nisbett, R. E. (1971). *The actor and the observer: Divergent perceptions of the causes of behavior*. Morristown, NJ: General Learning Press.
- Kinlaw, C. R., Kurtz-Costes, B., & Goldman-Fraser, J. (2001). Mothers' achievement beliefs and behaviors and their children's school readiness: A cultural comparison. *Applied Developmental Psychology, 22*, 493–506.
- Kelley, H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska symposium on motivation*. Lincoln: University of Nebraska Press.
- Kärkkäinen, R., Rätty, H., & Kasanen, K. (2011). Parents' perceptions of the malleability of their child's academic competencies. *Scandinavian Journal of Educational Research, 55*, 213–224.
- Laukkanen, J., Ojansuu, U., Tolvanen, A., Alatupa, S., & Aunola, K. (2014). Child's difficult temperament and mothers' parenting styles. *Journal of Child and Family Studies, 23*, 312–323.
- Lerikkanen, M.-K., Niemi, P., Poikkeus, A.-M., Poskiparta, M., Siekkinen, M., & Nurmi, J.-E. (2006). *The First Steps study*. Jyväskylä: University of Jyväskylä. Retrieved from <https://www.jyu.fi/ytk/laitokset/psykologia/en/research/research-areas/motivation-and-learning/projects/first-steps>
- Lindeman, J. (1998). *Ala-asteen lukutesti ALLU [Reading test for primary school]*. Turku: Turun yliopisto, Oppimistutkimuksen keskus.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*, 803–855.
- Mezulis, A. H., Abramson, L. Y., Hyde, J. S., & Hankin, B. L. (2004). Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and cultural differences in the self-serving attributional bias. *Psychological Bulletin, 130*, 711–747.
- Miller, S. (1995). Parents' attributions for their children's behavior. *Child Development, 66*, 1557–1584.



- Miller, R. L., Brickman, P., & Bolen, D. (1975). Attribution versus persuasion as a means for modifying behavior. *Journal of Personality and Social Psychology*, 31, 430–441.
- Murphey, D. (1992). Constructing the child: Relations between parents' beliefs and child outcomes. *Developmental Review*, 12, 199–232.
- Natale, K., Aunola, K., & Nurmi, J.-E. (2009). Children's school performance and their parents' causal attributions to ability and effort: A longitudinal study. *Journal of Applied Developmental Psychology*, 30, 14–22.
- Natale, K., Aunola, K., Nurmi, J.-E., Poikkeus, A.-M., Lyytinen, P., & Lyytinen, H. (2008). Mothers' causal attributions concerning the reading achievement of their children with and without familial risk for dyslexia. *Journal of Learning Disabilities*, 41, 274–285.
- Normaalikoulu (1985). *Beginner's reading test: Jyväskylä university teacher training school (primary level)*. Unpublished test material. Jyväskylä: University of Jyväskylä.
- Nurmi, J.-E. & Aunola, K. (2016). *Jyväskylä Entrance into Primary School study (JEPS)*. Jyväskylä: University of Jyväskylä. Retrieved from <https://www.jyu.fi/ytk/laitokset/psykologia/en/research/research-areas/motivation-and-learning/projects/jeps>
- Official Statistics of Finland (2010a). Appendix table 2: Comprehensive school drop-outs in academic years 1999/2000–2010/2011. In *Discontinuation of education*. Helsinki: Statistics Finland. Retrieved from [http://www.stat.fi/til/kkesk/2010/kkesk\\_2010\\_2012-03-20\\_tau\\_002\\_en.html](http://www.stat.fi/til/kkesk/2010/kkesk_2010_2012-03-20_tau_002_en.html)
- Official Statistics of Finland (2010b). Appendix table 1: Population aged 15 or over by level of education and gender, 2010. In *Educational structure of population*. Helsinki: Statistics Finland. Retrieved from [http://www.stat.fi/til/vkour/2010/vkour\\_2010\\_2011-12-02\\_tau\\_001\\_en.html](http://www.stat.fi/til/vkour/2010/vkour_2010_2011-12-02_tau_001_en.html)
- Official Statistics of Finland (2014). Annual review 2014, Appendix table 1: Family population and average size of family in 1950–2014. In *Families*. Helsinki: Statistics Finland. Retrieved from [http://www.stat.fi/til/perh/2014/02/perh\\_2014\\_02\\_2015-11-27\\_tau\\_001\\_en.html](http://www.stat.fi/til/perh/2014/02/perh_2014_02_2015-11-27_tau_001_en.html)
- Parsons, J. E., Adler, T. F., & Kaczala, C. M. (1982). Socialization of achievement attitudes and beliefs: Parental influences. *Child Development*, 53, 310–321.
- Peet, S. H., Powell, D. R., & O'Donnell, B. K. (1997). Mother–teacher congruence in perceptions of the child's competence and school engagement: Links to academic achievement. *Journal of Applied Developmental Psychology*, 18, 373–393.
- Peterson, C. & Steen, T. A. (2009). Optimistic explanatory style. In S. J. Lopez & C. R. Snyder (Eds.), *Oxford handbook of positive psychology* (2nd ed., pp. 313–321). New York: Oxford University Press.
- Phillipson, S. (2006). Cultural variability in parent and child achievement attributions: A study from Hong Kong. *Educational Psychology*, 26, 625–642.
- Pomerantz, E. M. & Dong, W. (2006). Effects of mothers' perceptions of children's competence: The moderating role of mothers' theories of competence. *Developmental Psychology*, 42, 950–961.

- Rouland, K. K., Rowley, S. J., & Kurtz-Costes, B. (2013). Self-views of African-American youth are related to the gender stereotypes and ability attributions of their parents. *Self and Identity, 12*, 382–399.
- Rytkönen, K., Aunola, K., & Nurmi, J.-E. (2005). Parents' causal attributions concerning their children's school achievement: A longitudinal study. *Merrill-Palmer Quarterly, 51*, 494–522.
- Rytkönen, K., Aunola, K., & Nurmi, J.-E. (2007). Do parents' causal attributions predict the accuracy and bias in their children's self-concept of math ability? A longitudinal study. *Educational Psychology, 27*, 771–788.
- Räty, H., Kasanen, K., & Honkalampi, K. (2006). Three years later: A follow-up study of parents' assessments of their children's competencies. *Journal of Applied Social Psychology, 36*, 2079–2099.
- Räty, H., Kasanen, K., & Kärkkäinen, R. (2006). School subjects as social categorisations. *Social Psychology of Education, 9*, 5–25.
- Räty, H., Vänskä, J., Kasanen, K., & Kärkkäinen, R. (2002). Parents' explanations of their child's performance in mathematics and reading: A replication and extension of Yee and Eccles. *Sex Roles, 46*, 121–128.
- Stevenson, H. W. & Stigler, J. W. (1992). *The learning gap: Why our schools are failing and what we can learn from Japanese and Chinese education*. New York: Summit Books.
- Tulviste, T. & Ahtonen, M. (2007). Child-rearing values of Estonian and Finnish mothers and fathers. *Journal of Cross-Cultural Psychology, 38*, 137–155.
- Weary, G., Stanley, M., & Harvey, J. (1989). *Attribution*. New York: Springer.
- Weiner, B. (1972). *Theories of motivation: From mechanisms to cognition*. Chicago: Rand McNally.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548–573.
- Weiner, B. (1992). *Human motivation: Metaphors, theories, and research*. Thousand Oaks, CA: Sage.
- Yee, D. K. & Eccles, J. S. (1988). Parent perceptions and attributions for children's math achievement. *Sex Roles, 19*, 317–333.

## ORIGINAL PAPERS

### I

#### STABILITY IN PARENTS' CAUSAL ATTRIBUTIONS FOR THEIR CHILDREN'S ACADEMIC PERFORMANCE: A NINE-YEAR FOLLOW-UP

by

Emmi Enlund, Kaisa Aunola, & Jari-Erik Nurmi, 2015

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## II

### **DEVELOPMENTAL PROFILES OF PARENTS' ABILITY ATTRIBUTIONS FOR THEIR CHILD'S SUCCESSES AND FAILURES AT SCHOOL**

by

Emmi Enlund, Kaisa Aunola, Asko Tolvanen, Marja-Kristiina Lerkkanen, & Jari-Erik  
Nurmi, 2016

Submitted manuscript.

### **III**

## **PARENTAL CAUSAL ATTRIBUTIONS AND EMOTIONS IN DAILY LEARNING SITUATIONS WITH THE CHILD**

by

Emmi Enlund, Kaisa Aunola, Asko Tolvanen, & Jari-Erik Nurmi, 2015

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Parental Causal Attributions and Emotions in Daily Learning Situations with the Child

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## Abstract

This study investigated the dynamics between the causal attributions parents reported daily for their children's success in learning situations and parental positive emotions. The sample consisted of 159 mothers and 147 fathers of 162 first graders (83 girls, 79 boys; aged from 6 to 7 years,  $M = 7.5$  years,  $SD = 3.6$  months). Parents filled in a structured diary questionnaire concerning their causal attributions and emotions over seven successive days in the fall semester and again over seven successive days in the spring semester. Multilevel analyses showed that both parental causal attributions and positive emotions varied more within parents (between days over the week) than between parents. Furthermore, mothers' positive emotions on a certain day predicted their causal attributions on that same day rather than vice versa. The higher the level of positive emotions parents reported in a specific day, the more they used effort and ability as causal attributions for their offspring's success on that same day.

*Keywords:* parents, daily causal attributions, daily emotions, diary study, within-parent variation

### Parental Causal Attributions and Emotions in Daily Learning Situations with the Child

A good deal of an individual's self-definition and affective life derive from how he or she is perceived by significant others and the affects elicited from them in various settings (Hareli & Weiner, 2002). One example of the perceptions of significant others is parental causal attributions for their children's learning outcomes. Such causal attributions influence parental expectations and aspirations concerning their children's performance, as well as the support, advice, and guidance provided for their children (Murphey, 1992). They also influence children's self-definition and affective lives (Dweck, 1999; Weiner, 1992). Previous research on parental causal attributions has typically focused on inter-individual differences between parents and the antecedents and consequences of these differences (Enlund, Aunola, & Nurmi, in press; Natale, Aunola, & Nurmi, 2009). Due to the dynamic and changing nature of parent-child interactions (Cox & Paley, 1997), one might assume that there is also intra-individual variation in parental causal attributions that is important for recognizing and understanding the everyday feedback parents give to their children. Consequently, the present study examined, first, the day-to-day variation in parental causal attributions for their children's success in learning situations, and day-to-day variation in parental emotions related to those situations. Second, as parents' causal attributions have been found to be associated with their emotions (Jackson, Lewandowski, Fleury, & Chin, 2001), our study examined the associations between parents' causal attributions and emotions over time. The study focused on four causal attributions, i.e., effort, ability, teaching/help, and the easiness of the task, shown by several studies to be most commonly used when parents explain their children's school performance (Cashmore & Goodnow, 1986; Dunton, McDevitt, & Hess, 1988; Holloway, 1986; O'Sullivan & Howe, 1996; Rätty, Vänskä, Kasanen, & Kärkkäinen, 2002; Yee & Eccles, 1988).



Two different frameworks explain how parental causal attributions come about. First, parents' causal attributions can be described as attributional styles, which, after formation, provide a basis for the kinds of causal attributions that parents construct later on for their children's performance (Bugental, Johnston, New, & Silvester, 1998). According to this view, a parent's causal attributions should be relatively stable over time. Previous research has provided some support for this notion. For example, Natale et al. (2009) found that during children's transition from preschool to primary school, inter-individual differences in parental causal attributions were relatively stable. Moreover, Enlund et al. (in press) found that such inter-individual differences were stable, even over the nine years of a child's comprehensive education. In such cases, stable parental causal attributions lead parents to give either beneficial or harmful feedback to the child systematically, depending on the cause to which they attribute the child's success. For example, praising a child for their ability fosters a view of ability as a fixed trait that one either has or does not have, which is known as the *entity theory of intelligence* (Dweck, 1999). This view leads the child to use performance-orientated learning strategies and may cause feelings of helplessness in challenging situations. Instead, praising the child for effort increases the use of mastery-orientated strategies and intrinsic motivation. This view is known as the *incremental theory of intelligence*, which claims that ability can increase with effort and guidance (Dweck, 1999). Finally, attributing a child's success to external causes, such as help and task ease, can be harmful because it diminishes a child's belief in their ability to influence their own performance.

The second framework suggests that parents' causal attributions for their children's performance may vary from one situation to another. It may originate, for example, from how children actually perform in a learning situation (Miller, 1995; Natale et al., 2009; Rytönen,

Aunola, & Nurmi, 2005, 2007) or how parents feel in the situation (Bolton et al., 2003; Jackson, et al., 2001). In this view, parental causal attributions are not seen as fixed styles, but as flexible interpretations with situation-dependent variability. When parental causal attributions change from time to time, the message given to their child is not as explicit as with fixed causal attributions (i.e., parents' attributional styles). Changing parental causal attributions is also likely to lead to a child's development of more flexible views of their capabilities. If parents' causal attributions change systematically as a function of children's performance, this may allow children to draw clear conclusions about why their parents end up making certain kinds of causal attributions.

These two frameworks are not exclusionary, but rather different perspectives concerning the same phenomenon. For example, although parents' causal attributions for their children's academic performance show relatively high inter-individual stability over time (Enlund et al., in press; Natale et al., 2009), it is certainly possible that there are still certain intra-individual variations due to the dynamic and changing nature of parent-child interactions (Cox & Paley, 1997). In other words, although parents have some general attribution style, there may be daily variation in causal attributions typical for those parents. However, to our knowledge, intra-individual variability in the causal attributions that parents form concerning their children has yet to be studied. Further research in this area would provide important and novel information about the everyday feedback parents provide their children. To examine this possibility in the present study, we applied diary data to determine the daily variations in parents' causal attributions and compared it to inter-individual variations between parents.

Parental emotions are one possible mechanism connected to daily variations in parental causal attributions for their children's learning outcomes. Existing affect-cognition theories and

experimental findings both suggest that mood influences the content of attributions (Forgas & Locke, 2005). There are two suggested alternative mechanisms. First, the affect priming model assumes that affect asserts its influence through memory mechanisms by facilitating the selective recall and use of mood-congruent information in inferential social judgments (Forgas, 2002). Second, the affect-as-information model (Schwarz & Clore, 1983) suggests that affect may influence evaluative judgments when people rely on a “How do I feel about it?” heuristic to infer evaluative reactions.

According to a review by Blanchette and Richards (2010), there is evidence that positive emotions increase reliance on more heuristic reasoning styles because the mood itself signals a benign situation and information processing may rely on habitual patterns. Furthermore, Forgas and Locke (2005) posited that positive moods often lead to decreased systematic attention to stimuli and an increased reliance on top-down inferences and generic knowledge structures when making judgments. Therefore, positive emotions may enhance the use of a parent’s attributional styles. In addition, some studies have shown that positive emotions lead people to more positive attitudes toward others and feeling more positive toward people that they know (Lyubomirsky & King, 2005). For example, when a mother’s causal attributions and emotions were studied in relation to a child’s problem behavior, the results indicated that positive emotions are negatively related to controllable and internal attributions such as effort (Bolton et al., 2003). This result suggests that a positive affect relates to blaming the child less than lack of such an affect.

The associations between causal attributions and experienced emotions can be different when measured inter-individually instead of intra-individually (Haynes, Perry, Stupnisky, & Daniels, 2009). Inter-individual differences in emotions that reflect, for example, parents’ well-being or temperament, can be assumed to be related to general attributional styles typical for the

parents. Conversely, intra-individual variability in emotions reflects daily or situation-specific emotions that may also associate with the causal attributions parents make in the same situation. However, no previous studies have attempted to differentiate between inter-individual and intra-individual variations in parents' causal attributions and emotions, although such research will be important in understanding the dynamics between parental causal attributions and emotions.

Hence, the present study examined the following research questions:

(1) To what extent do parents' causal attributions (i.e., effort, ability, easiness of the task and help) regarding their child's success in learning situations and their positive emotions (i.e., happiness and pride) in the same situations vary from one parent to another (i.e., between-individuals)? Additionally, to what extent do they vary within parents from one day to another? Based on the previous studies (Enlund et al., in press; Natale et al., 2009), we hypothesized that there is inter-individual variation in parents' causal attributions and positive emotions. However, due to the dynamic and changing nature of parent-child interactions (Cox & Paley, 1997), we hypothesized that there are also some intra-individual variations in these attributions and emotions from one day to another (Hypothesis 1).

(2) To what extent are parental causal attributions for a child's success in learning situations and their positive emotions in the same situations associated at the level of the parents (i.e., between-individuals) and at the level of days (i.e., within individual)? Based on previous findings (Bolton et al., 2003; Jackson et al., 2001), we assumed that positive emotions are associated with "child-favoring" causal attributions meaning that parents' positive emotions are positively related to the use of internal causal attributions, such as effort and ability, and negatively related to external causal attributions, such as easiness of the task and help. Both

results were expected at the level of parents (i.e., between-individuals) and at the level of days (i.e., within-individual) (Hypothesis 2).

(3) To what extent are causal attributions in success situations during a certain day predicted by parents' emotions in that situation, and to what extent are parental emotions in success situations during a certain day predicted by their causal attributions on that day? Based on the affect-cognition theories and previous findings (Forgas & Locke, 2005; Lyubomirsky & King, 2005), it was hypothesized that parents' positive emotions in success situations on a certain day would positively predict their use of internal causal attributions, such as effort and ability, as well as negatively predict their use of external causal attributions, such as teaching and easiness of the task, in the same situation on that day (Hypothesis 3).

Given that previous study has shown that mothers' causal attributions to children's successes are more stable than that of fathers (Enlund et al., in press), we studied mothers and fathers separately.

## **Method**

### **Participants and Procedure**

The sample consisted of the parents (159 mothers and 147 fathers) of 162 first grade students (83 girls, 79 boys; aged 6–7 years,  $M = 7.5$  years,  $SD = 3.6$  months). From the original 166 families contacted, the parents of four children did not respond to the daily questionnaire. Thus, the final sample comprised 162 children: 152 in normal classrooms, 10 in special education classrooms, and their mothers and fathers. Families with children from normal classrooms and families with children from special education classrooms did not differ ( $p > .05$ ) with regard to measures reported here. All children were selected from different classrooms by chance (one child per class) because teachers were also asked to fill in diary questions during the

data gathering regard to their interaction with the target children. (This data is not reported here.)

More than one child per classroom would have made the workload for teachers too extensive.

The study used participants from schools located in three medium-sized towns in Finland.

Both of the children's parents or legal guardians were asked to fill in a structured diary questionnaire that concerned their daily interactions with their child, their causal attributions in their child's success situations, and their own emotions in those situations over seven successive days in the fall semester (October) and seven successive days in the spring semester (April) of their child's first grade. We requested that the diary be filled in separately by the mother and father once on each of the 14 days before going to bed. To increase parental engagement in the timely completion of the daily diaries, each parent was paid 50€ (\$68.80) for participating in the study and returning all the questionnaires on time. From the 162 mothers – 15 of which were single – 159 (98%) returned the diaries on time. From the 147 fathers, 124 (84%) returned diary questionnaires on time. Both participating mothers and fathers contributed to their daily diaries, on average, on each of the 14 days (the average amount of responses for mothers was 13.97 and for fathers, 13.96). The major reason for not contributing to the diary on a particular day was that the parent was not at home that day.

The families were fairly representative of the general Finnish population (Official Statistics of Finland, 2010): 48% of the mothers and 32% of the fathers had completed at least a senior high school education; 46% of the mothers and 66% of the fathers had completed at least a junior high school education (comprehensive school); and 1% of the mothers and 2% of the fathers had not completed a junior high school education. In all, 78% of the families were nuclear families (67% married, 11% cohabiting parents), 12% blended families, and 10% single-parent families. The number of children per family ranged from 1 to 10 ( $M = 2.39$ ,  $SD = 1.03$ ).

## Measurements

**Parents' causal attributions.** First, parents' were asked whether the child succeeded in something during the day. Parents usually reported successes related to school (homework, exams, etc.), hobbies (learning a new skill, winning a match, etc.) or housework (participating and having a good attitude). If the child had succeeded, in the parents' opinion, the parents were asked the following: "*What was the primary cause of the child's success?*" Parents answered the question by rating four items (a = "*The child tried hard*"; b = "*The child has got talent*"; c = "*The assignment was easy*"; d = "*The child received help*") on a 5-point Likert-type scale (1 = *not at all*; 5 = *very much*). These items were used to measure four parental attributions: effort, ability, easiness of the task, and help, respectively. From the 159 mothers and 124 fathers who returned the questionnaire on time, 156 mothers and 107 fathers reported that the child succeeded at least once during the two weeks (see Table 1). Therefore, there are a maximum of 156 mothers and 107 fathers in the analyses.

Parents' daily causal attributions in their child's success situations (a mean value over the 14 days) correlated with the parents' causal attributions concerning their children's general performance in math and reading as follows: Among mothers the correlation for effort was .19 ( $p < .01$ ), for ability .32 ( $p < .001$ ), for easiness of the task .28 ( $p < .001$ ), and for help .27 ( $p < .001$ ). Among fathers the correlation for effort was .19 ( $p < .01$ ), for ability .36 ( $p < .001$ ), for easiness of the task .21 ( $p < .01$ ), and for help .21 ( $p < .01$ ).

----- Insert Table 1 about here -----

**Parents' positive emotions in their child's success situation.** Parents' positive emotions in their child's success situation were assessed with two items ("*I was happy*"; "*I was proud*"), taken from the Daily Emotion Scale (see Aunola, Tolvanen, Viljaranta, & Nurmi,

2013). On each day a parent reported that the child had succeeded, parents rated both items on a 5-point Likert-type scale (1 = *not at all*; 5 = *very much*). Because happiness and pride correlated strongly ( $r = .63$  among mothers,  $r = .71$  among fathers), they were used to create a latent factor to measure the parents' positive emotions.

Parental positive emotions in a child's success situation correlated with the parents' general daily positive emotions by  $.37$  ( $p < .001$ ) among mothers and  $.40$  ( $p < .001$ ) among fathers.

### **Analysis Strategy**

To answer the research questions, we conducted two sets of separate statistical analyses for mothers and fathers. First, multilevel modeling was conducted for the diary data over 14 days (seven days from the fall and seven days from the spring semester). This model consisted of two levels: a *within-person level* (between days) and a *between-person level* (between persons; Bolger, Davis, & Rafaeli, 2003). The within-person level specifies that each person's score for a certain variable is composed of his or her average score plus the deviation of that score from his or her mean score over days. The between-person level specifies that a certain score is composed of the overall mean score across all participants and a particular participant's deviations from the overall mean (Bolger et al., 2003). To begin, intraclass correlations (ICC) were calculated to determine what proportion of the variance in the observed variables was due to the differences experienced by each individual on different days (within-person variation) and what was due to differences between individuals (between-person variation). ICC value varies between .00 and 1.00 and it shows the proportion of variation between individuals. Then, we conducted multilevel analyses to learn to what extent the variation in parents' causal attributions and emotions were associated at the within-person and between-person levels.



For the second set of statistical analyses, we conducted recursive path models across days (see Figure 1) via structural equation modeling to determine whether it was parents' causal attributions on a particular day that predicted positive emotions on that same day, or vice versa. To examine this, we constructed a model that included variables in successive measurement points. In these recursive models, a certain causal attribution was predicted by the positive emotion on the same day, and simultaneously, the positive emotion was predicted by the causal attribution on the same day, after controlling for the level of variables from the previous day. The paths from one construct to another were fixed to be identical across all days. To maximize available information (i.e., to be able to include as many reported days as possible; see Table 1), data from both fall (seven days) and spring semesters (seven days) were used simultaneously in the analyses. The data were reorganized so that the seven-day sequence for a particular participant in fall and spring were included as two cases, producing nested data. By using the "Complex" procedure in Mplus, we accounted for the measurement periods (fall and spring) being nested within individuals. The "Complex" procedure computes standard errors and chi-square tests of model fit, taking into account the nesting sample (Muthén & Muthén, 2012).

----- Insert Figure 1 about here -----

In all of the tested models, the manifest variables of happiness and pride were used as indicators of the latent construct measuring parents' positive emotions (see Figure 1). The loadings of these indicators on the latent factor were both fixed to one. Parental causal attributions for effort, ability, task, and help included only one item.

All of the models were estimated by using the Mplus statistical package (version 7; Muthén & Muthén, 2012). Use of the missing data method with the models allowed us to include all available observations in the data set to estimate the model parameters. Because some of the

variables were initially skewed, the parameters of the path models were estimated using the MLR estimator.

The within-person level (seen below the diagonal) and between-person level (seen above the diagonal) correlations, means ( $M$ ), variances ( $Var$ ), and intraclass correlations ( $ICC$ ) for the manifest variables are presented in Table 2 for mothers and Table 3 for fathers.

----- Insert Table 2 about here -----

----- Insert Table 3 about here -----

## Results

### Intraclass Correlations

The intraclass correlations indicated that the causal attributions (i.e., effort, ability, task ease, and help) and positive emotions (i.e., happiness and pride) varied more between days than between persons. The results were similar for both mothers and fathers (see Table 2 for mothers and Table 3 for fathers). When the differences among intraclass correlations for different causal attributions were tested using the Wald test, no statistically significant differences were found either among mothers or fathers.

### Multilevel Models

Multilevel models regarding mothers' causal attributions for their children's success in learning situations and parental positive emotions showed, first, that at the between-person level, mothers' attributions were related to their emotions: the more typical it was for the mother to attribute the child's success to effort or ability, the higher the overall level of her positive emotions (see Table 4). Second, the results also showed that at the within-person level, mothers' attributions related to their emotions: on the days the mother attributed her child's success more to effort or ability than usual, she also reported a higher level of positive emotions than usual.

However, multilevel models regarding mothers' attributions to task ease and help showed no correlation between these variables and positive emotions, either at the between-person or within-person levels.

----- Insert Table 4 about here -----

A multilevel model regarding fathers' attributions and positive emotions showed first that, at the between-person level, fathers' attributions were related to their emotions: the more typical it was for the father to attribute the child's success to effort, the higher the overall level of his positive emotions (see Table 4). Second, the results also showed that at the within-person level, fathers' attributions associated with their emotions: on the days the father attributed his child's success more to effort or ability and less to help than usual; he also reported a higher level of positive emotions than usual. There was no significant association between task ease and positive emotion, either at the between-person or within-person levels.

### **Recursive Path Models**

Recursive path models were conducted for those attributions (i.e., effort and ability) found to be significantly associated with positive emotions in the previous multilevel models. The results showed that mothers' emotions predicted their attributions rather than vice versa: the higher the level of positive emotion the mother reported on a specific day, the more she attributed her child's success to effort and ability on that same day, after controlling for the level of the attribution on the previous day (Figure 2). However, the causal attributions did not predict the level of the mothers' positive emotions. Both the mothers' attributions to effort and ability and positive emotions showed substantial day-to-day stability.

----- Insert Figure 2 about here -----

Because fathers did not typically report success situations on consecutive days, it was not

possible to test recursive path models to investigate the predictions between fathers' causal attributions and positive emotions.

### **Discussion**

The present study examined the within-person daily variation in positive emotions and causal attributions that parents reported for their children's success in learning situations, as well as the dynamics between these daily attributions and positive emotions. The results showed that both mothers' and fathers' positive emotions and causal attributions vary more within individuals than between individuals. Inspection of the associations between daily attributions and emotions showed that the more positive emotions mothers and fathers reported on a particular day, the more likely they attributed their children's success to ability and effort on that day. Moreover, the results concerning the dynamics between daily attributions and emotions revealed that it was the daily variation in mothers' positive emotions that predicted daily causal attributions rather than vice versa. The present research is unique in the sense that it is the first study to attempt to differentiate between inter-individual and intra-individual variations in parents' causal attributions concerning their children's academic success and parental emotions, as well as the first to examine the dynamics between such daily emotions and causal attributions from one day to another.

#### **Intra-individual Variation in Parental Causal Attributions and Emotions**

Although there is previous research on inter-individual differences on how parents attribute their children's academic outcomes, less is known about how parental causal attributions vary daily. In terms of within-person variation, our study is, to our knowledge, one of the first to show that parental causal attributions vary substantially within individuals from one day or situation to another (Hypothesis 1). These results suggest that, despite the inter-

individual stability reported in previous studies (Enlund et al., in press; Natale et al., 2009), parental causal attributions are not fixed, but rather vary in daily learning situations with a child. Similar results have been reported previously in the domains of positive emotions and cognitive appraisals, i.e., perceived control and value of the situation (Goetz, Frenzel, Stoeger, & Hall, 2009; Nezlek, Vansteelandt, Mechelen, & Kuppens, 2008). As suggested by Goetz et al. (2009) in regard to positive emotions and cognitive appraisals, our results suggest that, besides examining inter-person differences in parents' causal attributions for their children's learning outcomes, it is also important to investigate intra-person variation in daily causal attributions. The present study adds to previous literature by showing that there is a substantial amount of daily variation in the ways in which parents attribute their children's success in academic situations; hence, by studying only mean values across individuals, a considerable amount of information will be lost.

In accordance with Hypothesis 2, the results of the present study showed further that a parent's daily positive emotions related to "child-favoring" causal attributions. The more positive emotions both mothers and fathers experienced in a particular situation the more they attributed their child's success to ability and effort. In addition, the more positive emotions the father experienced compared to his typical level, the less he attributed his child's success to help from others. These results add to the previous literature (Jackson et al., 2001) by suggesting that not only do individual differences among parents in their positive emotions associate with child-favoring causal attributions, but they also experience a higher level of positive emotions when dealing with a child in a particular daily learning situation as it relates to parental ability and effort attributions. These results add to our understanding of the everyday feedback parents'

provide for their children in various learning situations and show that this feedback closely relates to parents' daily emotions.

The third research question was whether daily causal attributions that parents report for their children's success predict their daily emotions, or vice versa. Our results showed, in accordance with the Hypothesis 3, that maternal situation-specific emotions predicted the daily variation in causal attributions rather than vice versa: the more positive emotions a mother reported on a specific day, the more she attributed her child's success to effort and ability on the same day. In other words, mothers tended to make more child-favoring causal attributions when they felt more positive in the situation with their child. Our findings did not show any evidence of the impact of daily maternal causal attributions on their emotions.

Because fathers did not typically report success situations on consecutive days, it was not possible to test recursive path models to investigate the predictions between fathers' causal attributions and positive emotions. There are several possible reasons why fathers reported fewer academic successes for their children as compared to mothers. One explanation is that previous studies on home-based parent-child interaction showed that, in Finland, mothers spent twice as much time with the child as compared to fathers (Miettinen & Rotkirch, 2012). Furthermore, more than twice as many fathers as mothers do not read to their children or help them with homework (Kärmeniemi & Aunola, 2014). These results may explain why fathers reported fewer academic successes in respect to their children as compared to mothers. Another possible explanation is that fathers impose higher standards than mothers do for appraising certain events as successes for their child; hence they do not report as many success situations in daily life as mothers do.

Overall, the findings of our study parallel affect-cognition theories (Forgas & Locke, 2005), such as the affect priming model (Forgas, 2002) and the affect-as-information model (Schwarz & Clore, 1983). Our results are also in accordance with other findings on social cognition and attitudes, showing that positive emotions lead people to have more positive attitudes toward others (Lyubomirsky & King, 2005). For example, in studies regarding a mother's causal attributions and emotions in relation to the child's problem behavior, the results showed positive emotions as negatively related to controllable and internal attributions (e.g., effort; Bolton et al., 2003), suggesting that positive affect relates to blaming the child less than lack of such affects.

Our study is, to our knowledge, the first to provide empirical support for the impact of daily positive emotions on daily parental causal attributions. The results of this study suggest that parental positive emotions, when activated in children's successful learning situations, enhance an optimistic view of the child's effort and ability. This finding suggests that parents' positive emotions provide a basis for positive attributional feedback for the child. However, this requires future study to determine the impact of parental daily causal attributions on child behavior.

### **Inter-individual Variation in Parental Emotions and Causal Attributions**

The present study showed also a noteworthy inter-individual variation in parental causal attributions, suggesting that in addition to day-to-day variability, parents have different styles of attributing their child's success in learning situations when compared to each other. The results further showed that this inter-individual variation between parental causal attributions was associated with their level of positive emotions: the more mothers and fathers showed positive emotion when dealing with their children, the more likely they were to attribute their child's success to effort and ability (Hypothesis 2). In other words, parents who reported more positive

emotions while interacting with their child in learning situations had more child-favoring causal attributions overall than parents with a lower level of positive emotions.

These results are in accordance with previous studies, which showed that positive emotions lead to more child-favoring attributions (Jackson et al., 2001) as success is attributed increasingly to internal attributions, i.e., effort and ability. Attributing a child's success to effort has many positive effects on the child. For example, by attributing a child's success increasingly to effort, parents boost the child's school performance (Natale et al., 2009) and enhance their adaptive learning strategies (Kamins & Dweck, 1999). However, while experiencing positive emotions in the present study, parents' also increasingly attributed their child's success to ability. Although it has been suggested that attributing child success to ability may have negative consequences for the child, such as increased performance-orientated learning strategies and feelings of helplessness in challenging situations (Dweck, 1999), empirical findings have not always supported this notion. For example, Natale et al. (2009) found that the more parents attributed their child's success to ability, the better children performed later on.

### **Limitations and Conclusions**

This study also includes some limitations. First, only successful situations were studied, although the parent's use causal attributions to explain also their child's failures. In this study, questions regarding a child's failure situations were also included in the parent's questionnaire. However, during the 14-day study period, only 36, 8% (62) of the studied mothers and 16, 1% (27) of the fathers reported at least two failure situations. Therefore, it was not possible to analyze variation in parental causal attributions for their child's failure. Second, parents were not asked to assess the degree or the importance of the success situations. Having such information would have provided a more specific understanding about the effect of situation-specific features



on daily causal attributions. Third, only two positive emotions were measured for use in the analysis as one construct. Future studies need to examine a larger variety of emotions related to parental causal attributions. Fourth, parents were asked to fill in a structured diary only once a day. More intensive measurements would provide better possibility for capturing the intra-person variability of parental causal attributions and emotions in daily interactions with a child. Fifth, as fathers did not typically report success situations on consecutive days, it was not possible to investigate the predictions between fathers' causal attributions and positive emotions among them. Sixth, our study focused only on mothers' and fathers' causal attributions and emotions. Consequently, there is an evident need of future research that would also include teachers and peers.

Overall, the results of this study suggested that, even though earlier studies have reported that parents have stable ways of attributing a child's success over shorter and longer times, substantial intra-individual variation exists in the ways in which mothers and fathers attribute their children's success in various daily-reported learning situations. Our findings showed further that daily positive emotions among mothers predicted their use of child-favoring causal attributions.

## References

- Aunola, K., Tolvanen, A., Viljaranta, J., & Nurmi, J. (2013). Psychological control in daily parent-child interactions increases children's negative emotions. *Journal of Family Psychology, 27*(3), 453-462. DOI: 10.1037/a0032891
- Blanchette, I., & Richards, A. (2010). The influence of affect on higher level cognition: A review of research on interpretation, judgement, decision making and reasoning, *Cognition and Emotion, 24*(4), 561-595. DOI: 10.1080/02699930903132496
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*(1), 579-616. DOI: 10.1146/annurev.psych.54.101601.145030
- Bolton, C., Calam, R., Barrowclough, C., Peters, S., Roberts, J., Wearden, A., & Morris, J. (2003). Expressed emotion, attributions and depression in mothers of children with problem behaviour. *Journal of Child Psychology and Psychiatry, 44*(2), 242-254. DOI: 10.1111/1469-7610.00117
- Bugental, D. B., Johnston, C., New, M., & Silvester, J. (1998). Measuring parental attributions: Conceptual and methodological issues. *Journal of Family Psychology, 12*(4), 459-480. DOI: 10.1037/0893-3200.12.4.459
- Cashmore, J. A., & Goodnow, J. J. (1986). Parent-child agreement on attributional beliefs. *International Journal of Behavioral Development, 9*(2), 191-204.
- Cox, M. J., & Paley, B. (1997). Families as systems. *Annual Review of Psychology, 48*(1), 243-267. DOI: 10.1146/annurev.psych.48.1.243
- Dunton, K. J., McDevitt, T. M., & Hess, R. D. (1988). Origins of mothers' attributions about their daughters' and sons' performance in mathematics in sixth grade. *Merrill-Palmer Quarterly, 34*(1), 47-70.

- Dweck, C. (1999). *Self-theories: Their Role in Motivation, Personality, and Development*. Philadelphia: Taylor & Francis.
- Enlund, E., Aunola, K., & Nurmi, J. E. (in press). Stability in Parents' Causal Attributions for Their Children's Academic Performance: A Nine-Year Follow-Up. *Merrill-Palmer Quarterly*.
- Forgas, J. (2002). Feeling and Doing: Affective Influences on Interpersonal Behavior. *Psychological Inquiry*, 13(1), 1-28. DOI: 10.1207/S15327965PLI1301\_01
- Forgas, J., & Locke, J. (2005). BRIEF REPORT: Affective influences on causal inferences: The effects of mood on attributions for positive and negative interpersonal episodes. *Cognition and Emotion*, 19(7), 1071-1081. DOI: 10.1080/02699930541000093
- Goetz, T., Frenzel, A. C., Stoeger, H., & Hall, N. C. (2009). Antecedents of Everyday Positive Emotions: An Experience Sampling Analysis. *Motivation and Emotion*, 34, 49-62. DOI: 10.1007/s11031-009-9152-2
- Hareli, S., & Weiner, B. (2002). Social emotions and personality inferences: A scaffold for a new direction in the study of achievement motivation. *Educational Psychologist*, 37(3), 183-193. DOI: 10.1207/S15326985EP3703\_4
- Haynes, T. L., Perry, R. P., Stupnisky, R. H., & Daniels, L. M. (2009). A review of Attributional Retraining Treatments: Fostering Engagement and Persistence in Vulnerable College Students. In J. C. Smart (Ed.), *Higher Education: Handbook of Theory and Research* (pp. 227-272). New York: Springer.
- Holloway, S. D. (1986). The relationship of mothers' beliefs to children's mathematics achievement: Some effects of sex differences. *Merrill-Palmer Quarterly*, 32(3), 231-250.

- Jackson, L., Lewandowski, D., Fleury, R., & Chin, P. (2001). Effects of affect, stereotype consistency, and valence of behavior on causal attributions. *The Journal of Social Psychology, 141*(1), 31-48. DOI: 10.1080/00224540109600521
- Kamins, M., & Dweck, C. (1999). Person Versus Process Praise and Criticism: Implications for Contingent Self-Worth and Coping. *Developmental Psychology, 35*(3), 835-847. DOI: 10.1037/0012-1649.35.3.835
- Kärmeniemi, S., & Aunola, K. (2014). Vanhemman lapsensa kanssa viettämän ajan yhteys lapsen koulutaitoihin ensimmäisellä luokalla. *Psykologia, 49*(2), 135-151.
- Lyubomirsky, S., & King, L. (2005). The Benefits of Frequent Positive Affect: Does Happiness Lead to Success? *Psychological Bulletin, 131*(6), 803-855. DOI: 10.1037/0033-2909.131.6.803
- Miettinen, A., & Rotkirch, A. (2012). Yhteistä aikaa etsimässä. Lapsiperheiden ajankäyttö 2000-luvulla [Looking for family time. Families' time use in the 2000s.] Väestötutkimuslaitos. Katsauksia E42/2012. Helsinki, Finland: Väestöliitto.
- Miller, S. (1995). Parents' attributions for their children's behavior. *Child Development, 66*(6), 1557-1584. DOI: 10.1111/j.1467-8624.1995.tb00952.x
- Murphey, D. (1992). Constructing the child: Relations between parents' beliefs and child outcomes. *Developmental Review, 12*, 199-232. DOI: 10.1016/0273-2297(92)90009-Q
- Muthén, L., & Muthén, B. (2012). *Mplus* (5th ed.) The comprehensive modelling program for applied researchers: user's guide.
- Natale, K., Aunola, K., & Nurmi, J. E. (2009). Children's school performance and their parents' causal attributions to ability and effort: A longitudinal study. *Journal of Applied Developmental Psychology, 30*(1), 14-22. DOI: 10.1016/j.appdev.2008.10.002

- Nezlek, J. B., Vansteelandt, K., Mechelen, I. V., & Kuppens, P. (2008). Appraisal-emotion relationship in everyday life. *Emotion, 8*(1), 145-150. DOI: 10.1037/1528-3542.8.1.145
- Official Statistics of Finland. (2010). Educational structure of population. Retrieved 06/18, 2013, from [http://www.stat.fi/til/vkour/2010/vkour\\_2010\\_2011-12-02\\_tau\\_001\\_fi.html](http://www.stat.fi/til/vkour/2010/vkour_2010_2011-12-02_tau_001_fi.html)
- O'Sullivan, J. T., & Howe, M. L. (1996). Causal attributions and reading achievement: Individual differences in low-income families. *Contemporary Educational Psychology, 21*(4), 363-387. DOI: 10.1006/ceps.1996.0027
- Räty, H., Vänskä, J., Kasanen, K., & Kärkkäinen, R. (2002). Parents' explanations of their child's performance in mathematics and reading: A replication and extension of Yee and Eccles. *Sex Roles, 46*(3-4), 121-128. DOI: 10.1023/A:1016573627828
- Rytkönen, K., Aunola, K., & Nurmi, J. (2005). Parents' causal attributions concerning their children's school achievement: A longitudinal study. *Merrill-Palmer Quarterly, 51*(4), 494-522. DOI: 10.1353/mpq.2005.0027
- Rytkönen, K., Aunola, K., & Nurmi, J. (2007). Do parents' causal attributions predict the accuracy and bias in their children's self-concept of math ability? A longitudinal study. *Educational Psychology, 27*(6), 771-788. DOI: 10.1080/01443410701309316
- Schwarz, N., & Clore, G.L. (1983). Mood, misattribution and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45*, 513-523. DOI: 10.1037/0022-3514.45.3.513
- Weiner, B. (1992). *Human motivation: Metaphors, theories, and research*. SAGE Publications, Incorporated.
- Yee, D. K., & Eccles, J. S. (1988). Parent perceptions and attributions for children's math achievement. *Sex Roles, 19*(5-6), 317-333. DOI: 10.1007/BF00289840

Table 1

*The amount of successes mothers and fathers at least reported during the two week study period.*

	Mothers ( $n = 159$ )	Fathers ( $n = 124$ )
At least 1 success	156	107
At least 2 successes	143	85
At least 3 successes	128	60
At least 4 successes	113	42
At least 5 successes	89	27
At least 6 successes	73	21
At least 7 successes	54	16
At least 8 successes	41	10
At least 9 successes	32	9
At least 10 successes	21	7
At least 11 successes	16	3
At least 12 successes	7	3
At least 13 successes	5	1
At least 14 successes	3	0

Table 2

*Mothers' Sample Correlation Matrix of Manifest Variables (between-person level shown above the diagonal; within-person level shown below the diagonal), and Their Means (M), Variances (Var), and Intraclass Correlations (ICC)*

	1.	2.	3.	4.	5.	6.	<i>M</i>	<i>Var</i>	<i>ICC</i>
1. Attribution to effort	1.00	.16	-.36	.31	.41	.38	4.32	.26	.34
2. Attribution to ability	.13	1.00	.31	.16	.27	.45	3.80	.32	.33
3. Attribution to task easiness	-.15	-.05	1.00	.30	-.10	-.01	2.73	.32	.23
4. Attribution to help	.03	-.17	-.11	1.00	.03	.11	2.50	.43	.24
5. Happiness	.11	.21	.06	-.05	1.00	.78	4.36	.20	.36
6. Pride	.13	.26	-.07	-.06	.54	1.00	4.31	.29	.40
<i>Var</i>	.49	.65	1.02	1.33	.36	.44			

Table 3

*Fathers' Sample Correlation Matrix of Manifest Variables (between-person level shown above the diagonal; within-person level shown below the diagonal), and Their Means (M), Variances (Var), and Intraclass Correlations (ICC)*

	1.	2.	3.	4.	5.	6.	<i>M</i>	<i>Var</i>	<i>ICC</i>
1. Attribution to effort	1.00	.35	-.11	-.10	.53	.40	4.25	.24	.39
2. Attribution to ability	.18	1.00	-.13	.07	.37	.44	3.89	.26	.43
3. Attribution to task easiness	-.15	-.20	1.00	.25	-.18	.10	2.59	.41	.37
4. Attribution to help	-.01	-.25	.07	1.00	.25	.28	2.39	.42	.28
5. Happiness	.10	.15	-.03	-.19	1.00	.86	4.17	.17	.37
6. Pride	.18	.22	-.15	-.18	.61	1.00	3.40	.31	.42
<i>Var</i>	.38	.35	.70	1.06	.29	.43			



Table 4

*Correlations between Mothers and Fathers Causal Attributions and Positive Emotion*

	Positive emotion			
	Within-level		Between-level	
	Mothers	Fathers	Mothers	Fathers
1. Attribution to effort	.16**	.14*	.43***	.52***
2. Attribution to ability	.30***	.21**	.37***	.37
3. Attribution to task easiness	.01	-.08	-.08	-.12
4. Attribution to help	-.07	-.24***	.06	.23

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

Figure 1

*Schematic Model of Recursive Path Models*

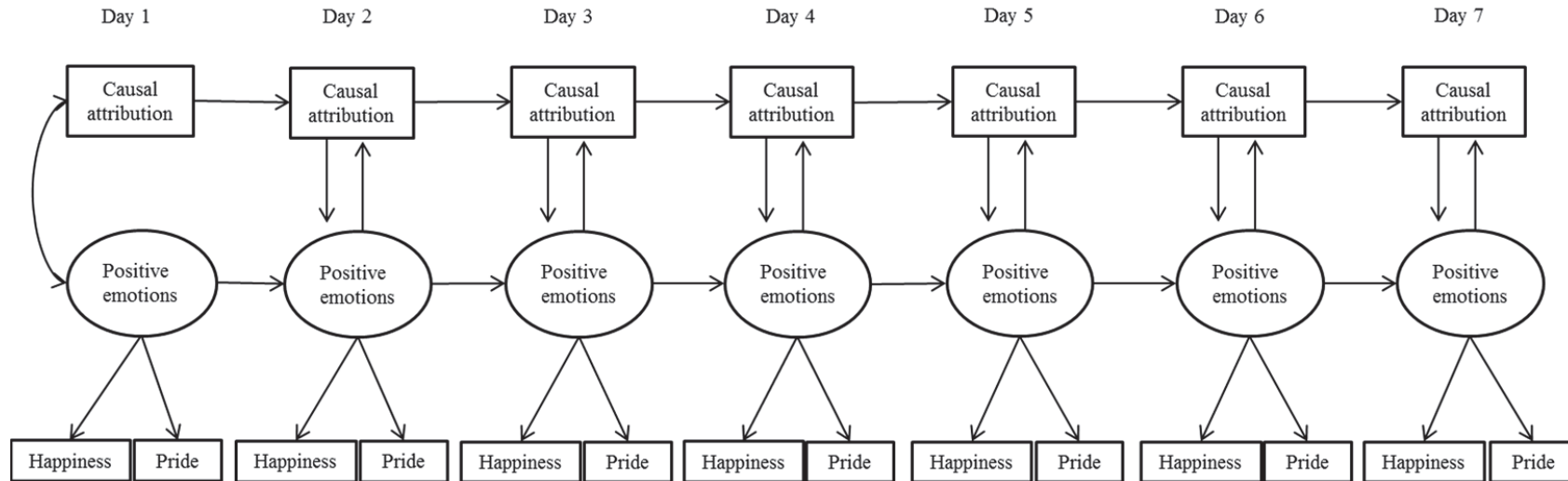
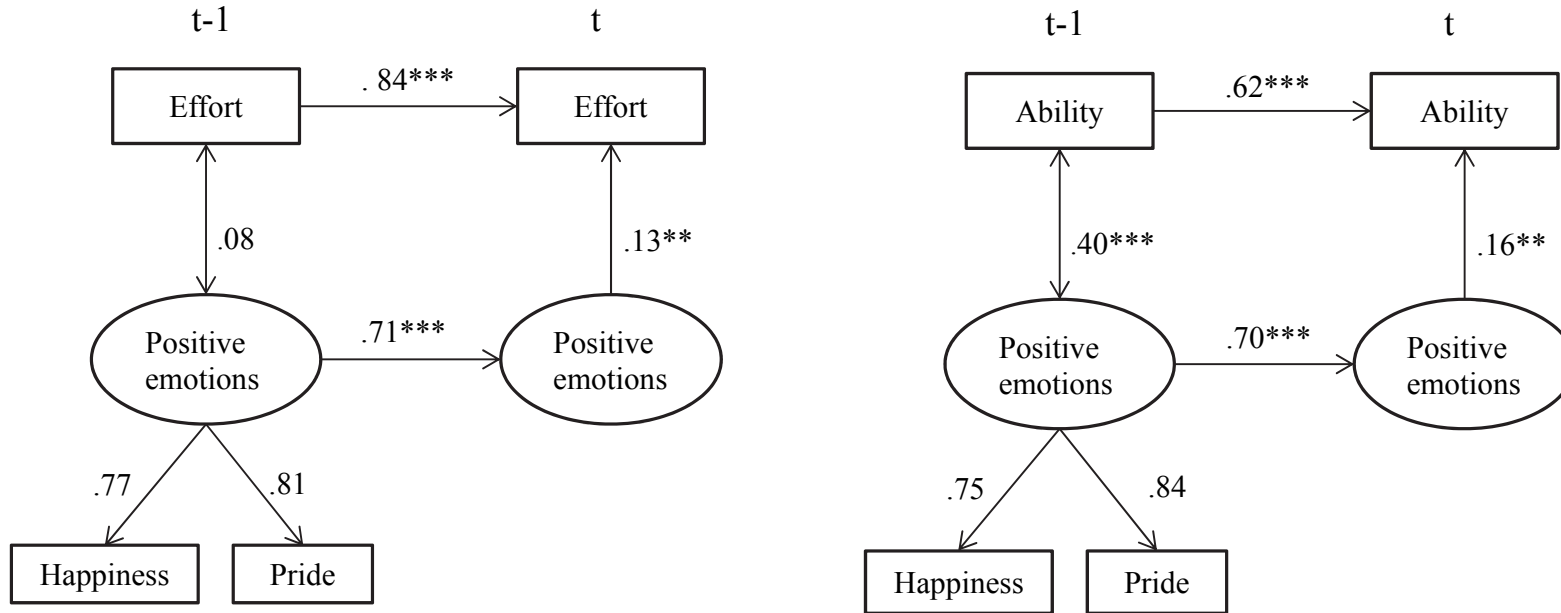


Figure 2

*Path Models for Mothers' Causal Attribution to Effort and Positive Emotions on the Left, and to Ability and Positive Emotions on the Right*



*Note.* The values are average standardized scores across the seven day period

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