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Running head: Parental assistance and homework motivation

Applying an observational lens to identify parental behaviours associated with children's homework motivation

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Abstract

Background. Extant research has traditionally associated children's achievement motivation with socio-emotional parental behaviours such as demonstrations of affect, responsiveness, and the degree of parental control.

Aims. This study explored the extent to which parental socio-emotional and instructional behaviours (including the contingency of instructional scaffolding) both related to children's mastery and performance tendencies towards homework-like activities.

Sample. The study involved 9 underachieving primary-aged children and their parents, with 4 children showing predominantly mastery-oriented behaviours in the homework context and 5 showing predominantly performance-oriented behaviours.

Methods. An in-depth observational analysis of video-recorded parent-child interactions during 4 homework-like sessions was carried out for each case. Socio-emotional and instructional parental behaviours were coded and subjected to non-parametric quantitative analyses. Subsequently, thick descriptions of parent-child interactions were used to identify critical aspects of parental assistance.

Results. Moderate cognitive demand was associated with mastery orientation while negative affect was related to performance orientation. As revealed quantitatively and qualitatively, socio-emotional and instructional parental behaviours were also associated with each other, forming distinct profiles of parental behaviours related to children's homework motivation.

Conclusions. The findings support the idea that instructional parental behaviours are as important as socio-emotional ones in the analysis of children's homework motivation. The value of observational methods in investigating the target variables is discussed.

Research conducted under social cognitive models has identified parents as critical socialization agents in children's developing motivation (Cheung & Pomerantz, 2012; Joussemet, Landry, & Koestner, 2008; Pomerantz, Ng, & Wang, 2006), stressing particularly the importance of socio-emotional parental behaviours. In this respect, the presence of positive affect (Pomerantz, Wang, & Ng, 2005), autonomy-granting parental behaviours (Dumont, Trautwein, Nagy, & Nagengast, 2014; Gottfried, Fleming, & Gottfried, 1994; Grolnick, 2003), and parental responsiveness (Hokoda & Fincham, 1995; Salonen, Lepola, & Vauras, 2007) have all been associated with mastery approaches to academic tasks (i.e., focus on learning and understanding) and positive academic outcomes.

A crucial issue that remains largely unexplored, however, is the role that instructional parental behaviours play on children's developing motivation. Research that has focused on the quality of parental instruction on children's academic achievement has arrived to the conclusion that it is not only the challenge involved in parental mediation that is conducive to positive outcomes, but also the contingency with which instructional scaffolds are provided (Mattanah, Pratt, Cowan, & Cowan, 2005; Neitzel & Stright, 2003; Pratt, Green, MacVicar, & Bountrogianni, 1992; Wood, Bruner, & Ross, 1976; Wood & Middleton, 1975). If we assume that children's development of adaptive motivation is impacted by the degree to which they feel competent in their learning endeavours (Deci & Ryan, 2002), there are grounds to expect that the quality of parental instructional support, both in terms of cognitive challenge and contingent provision, will play an important role in this development.

The main goal of this research was therefore to explore the extent to which parental socio-emotional and instructional behaviours both related to children's evidence of motivation in a homework context. A secondary goal was to investigate, through a fine-grained observational

analysis of parent-child interactions during homework, the extent to which the timing of parental support (as assessed by the contingency of instructional scaffolds) was of significance.

Homework was selected as the observational context for this study not only because of the known positive associations between homework and academic achievement (Cooper, Civey Robinson, & Patall, 2006; Trautwein, 2007), but also because of the significance of the role played by parents in homework contexts (Cooper, Lindsay, & Nye, 2000; Pomerantz et al., 2006; Xu & Corno, 2003). From a research perspective, homework situations demand emotional and cognitive regulation from both adults and children (Xu & Corno, 1998), enabling the observation of a wide repertoire of forms of parental assistance and motivational responses on the part of children. From an ecological perspective, in turn, investigating further the quality of parental support in homework situations matters to teachers and parents as homework is the most typical way through which parents get involved in children's schooling, being therefore a relevant intersection point between home and school (Dumont et al., 2014; Trautwein, Niggli, Schnyder, & Lüdtke, 2009).

Achievement motivation and academic performance

Achievement motivation was conceptualised in this study as the “*direction, intensity, persistence, and quality*” of children's behaviours in regard to academic tasks (Maehr & Meyer, 1997, p.373). Since the aim of the study was to explore the extent to which specific features of parental assistance related to children's motivation during homework-like activities, the notion of achievement motivation was grounded in social cognitive theories of motivation development with an emphasis on socialisation processes.

Within the achievement motivation literature two major patterns of motivational goals have been identified: mastery orientation and performance orientation (Maehr & Zusho, 2009). While

mastery orientation is characterised by a focus on improving skills, developing new understandings, and acquiring new learning (despite the potential challenges involved), performance orientation has an emphasis on avoiding failure and demonstrating competence in relation to others (Dweck & Leggett, 1988). The benefits associated with mastery orientation have been well established with the construct being associated with evidence of self-regulated learning (Pintrich, 2000), enhanced persistence in the face of challenge (Elliot & Dweck, 1988), increased use of cognitive and metacognitive strategies (Bartels & Magun-Jackson, 2009), and higher academic outcomes (Linnenbrink-Garcia, Tyson, & Patall, 2008). In contrast, performance orientation (particularly avoidant in valence) has been linked to enhanced anxiety, low interest, poor self-regulation, and low achievement (Diseth & Kobbeltvedt, 2010; Elliot & McGregor, 2001; Senko, Durik, & Harackiewicz, 2008). As argued by Elliot (2006, p.115), while a mastery approach facilitates *thriving* at school, a performance one leads to *surviving*.

Though aware that further distinctions have been theoretically established and empirically validated identifying approach and avoidant variances to mastery and performance orientations (Elliot, 2006), this research was framed using these two categories (mastery vs. performance) as they sensitively capture behavioural evidence of achievement motivation in young children (Day & Burns, 2011). This was particularly relevant as the study adopted a behavioural approach to gathering evidence on children's motivation by focusing on overt reactions to the activity or parental assistance that were indicative of mastery or performance orientation (Fulmer & Frijters, 2009). The operationalization of these categories was therefore grounded on the video data with mastery orientation bearing close connections to what has been identified by Elliot (1999) as mastery-approach orientation (striving to achieve mastery of a skill or new understanding) and performance orientation being close to the definition of performance-avoidance orientation

(aiming at not doing worse than others) and including behaviours indicative of work-avoidance (Meece, 1994; Wigfield & Cambria, 2010).

Parenting and children's homework motivation

Within a social cognitive understanding of achievement motivation (Schunk, Pintrich, & Meece, 2008) extensive research has been carried out on the impact of parenting on children's developing motivational orientation (Pomerantz, Grolnick, & Price, 2005). Two major clusters of opposing parental behaviours (Autonomy Support vs. Control) have been associated respectively to mastery and performance motivation in children (Joussemet et al., 2008). Autonomy support, understood as the parents' tendency to allow children to make autonomous decisions and explore their environment (Ryan, Deci, Grolnick, & La Guardia, 2006), has been associated with children's evidence of school engagement, independent self-regulation, positive academic outcomes, and teacher-rated competence (Grolnick & Ryan, 1989; Joussemet, Koestner, Lekes, & Landry, 2005; Ng, Kenney-Benson, & Pomerantz, 2004). In contrast, evidence of intrusive and psychological forms of parental control that push children towards externally determined outcomes have been identified as particularly harming for children's motivation towards academic tasks including homework, increasing anxiety and feelings of helplessness (Gottfried et al., 1994; Grolnick, 2003; Trautwein et al., 2009).

Parental displays of affect and the extent of their responsiveness to their children's needs and initiatives have also been associated to children's developing motivation towards school. For example, a study by Pomerantz, Wang, and Eng (2005) exploring maternal affect in homework contexts showed that positive affect predicted children's positive motivational and emotional functioning particularly in the case of helpless children. Studies on parental responsiveness have reached consistent findings with parents' ability to timely attend to their children's emotional

needs and initiatives being associated with mastery orientation (Hokoda & Fincham, 1995; Salonen et al., 2007).

Though, as illustrated above, we have achieved a solid understanding of socio-emotional parental behaviours associated with children's developing motivation (i.e.: autonomy/control, affect, and responsiveness), much less is known about the role played by instructional aspects of parental assistance such as the level of cognitive challenge embedded in parental assistance, and the contingency with which instructional scaffolds are provided.

An indication of the potential significance of parental instructional behaviours on children's motivation derives from studies exploring autonomy support as the target construct. Ng et al. (2004), for instance, identified a number of parental instructional behaviours as being indicators of autonomy support. In their work they argued that "Parent's may support children's autonomy...[by] allowing them to work on their own...helping them to generate their *own strategies for solving challenges...discussing learning strategies* with their children when they have failed..." (p.765, italics added). It is reasonable therefore to suggest that our understanding of children's achievement motivation might be enhanced by a detailed exploration of parental instructional behaviours.

According to (Pino-Pasternak, Whitebread, & Tolmie, 2010) only a few studies have adopted a multi-dimensional approach to the analysis of parental assistance in academic domains investigating both socio-emotional and instructional behaviours (see for example, Carr & Pike, 2012; Mattanah et al, 2005; Neitzel & Stright, 2003; Stright, Yang-Herr, & Neitzel, 2009). Despite the fact that these studies have only indirectly addressed children's motivation by targeting outcomes like self-regulation, academic achievement, class participation, and behavioural adjustment, their outcomes seem to warrant further exploration of the role of parental instructional behaviours on children's motivation. Studies carried out by Stright and colleagues

(op cit.), for example, have shown that behaviours such as the parents' use of metacognitive talk predict primary-aged children's participation and use of metacognitive talk in classroom situations. Moreover, these multidimensional studies have demonstrated that in order for it to lead to positive academic outcomes, parental mediation not only needs to be sufficiently challenging but has to be delivered contingently, that is increasing support after evidence of outcomes failure or lack of understanding and withdrawing support in response to outcomes success and evidence of understanding. The evidence presented above indicates therefore that the timing of parental instructional assistance (understood as contingent instructional scaffolding) can be as critical as the timing of parental socio-emotional responses in influencing children's motivation, issue that calls for observational studies specifically designed to capture temporal aspects of parent-child interactive behaviours.

The present study

The present study aimed at investigating the extent to which parental socio-emotional and instructional behaviours both related to underachieving primary-aged children's mastery- and performance-oriented behaviours towards homework. The study addressed the following research question: *To what extent do socio-emotional and instructional parental behaviours relate to underachieving primary-aged children's homework motivation?*

Based on extant research we hypothesised that:

1. Positive socio-emotional behaviours (i.e. presence of positive affect, parental responsiveness and autonomy granting behaviours) would be associated with children's evidence of mastery-oriented behaviours.

2. Cognitively challenging parental instructional support and contingent use of parental scaffolding (i.e. increasing assistance after failure and withdrawing assistance after success) would be related to children's evidence of mastery-oriented behaviours.

In order to investigate these hypotheses parent-child interactions during four homework-like activities were video-recorded and coded using multiple coding schemes designed to target specific parental and child behaviours. Thick descriptions for each case were also carried out. The analysis (to be detailed in the following sections) involved a quantitative layer, which explored group differences and relationships between children's motivation and parental behaviours, and a qualitative layer, which resulted in the development of a typology of socio-emotional and instructional behaviours associated with mastery and performance orientation respectively.

A decision to focus on underachieving students was based on the already argued connections between motivational orientations, academic achievement, and school engagement (Steinmayr & Spinath, 2009; Valeski & Stipek, 2001). In addition, the parenting literature has also established that underachieving students are particularly sensitive to variations in forms of parental school involvement and show heightened reactions towards specific parenting behaviours such as control and affect (Ng et al., 2004; Pomerantz, Wang, & Eng, 2005). It is therefore argued that increasing our understanding of parent-child dynamics that lead to different motivational orientations in these students is of significance to students themselves, families, educators, and researchers.

Method

Participants

Participants consisted of 9 families recruited from three schools in Santiago, Chile. These families were a subset of a larger cohort of underachieving students (n=15) and their parents involved in a study exploring associations between parental assistance and children's evidence of cognitive self-regulation in the curriculum areas of literacy and numeracy (Pino-Pasternak et al., 2010). Eligibility for this initial cohort was determined through the analysis of children's academic outcomes in literacy and numeracy in the year prior to the study. Children were considered eligible to participate if their academic outcomes were at least 1 SD below the class mean in at least one of these two curriculum areas. Parents of these children were approached via the schools.

In order to obtain a subsample from the initial cohort, data gathered during an initial assessment activity in the original study was analysed to investigate the presence of different motivational profiles among the participants. In this initial task children were asked to (a) answer questions from a reading passage and (b) solve two word math problems. Both activities were judged by class teachers to be at grade level in terms of difficulty (see Pino-Pasternak et al., 2010). Children's execution of the tasks was video-recorded and subsequently analysed exploring the incidence of spontaneous behavioural indicators of mastery orientation (MO) and performance orientation (PO) (see section on coding for specific examples of behaviours and inter-rater reliability coefficients).

Since the duration of the sessions varied slightly (ranging from 15 to 20 minutes) rates of MO and PO were calculated for each case (rate= number of behavioural incidences per minute). These rates were subsequently computed into a Motivation Composite score (MO minus PO = MotCOMP) that was only used for the purpose of subsample selection. As shown in Table 1, participants were ranked according to this composite and divided into three groups on the basis of the score distribution, with the two extreme groups selected for this paper's analysis (in grey).

-----INSERT TABLE 1 ABOUT HERE-----

Differences in MO and PO between the two extreme groups were explored using a non-parametric equivalent to independent *t-test* (Mann-Whitney U test). In line with the descriptive data, the results showed that the two groups differed in PO ($U=0.000$, $p= 0.014$, $r= -0.82$) but not in MO ($U=6.000$, $p= 0.327$ $r=-0.33$).

It is important to point out that despite the existing variability within the 9 cases, which allowed the identification of two groups in terms of motivational orientation, these children, overall, were more prone to engage in performance-oriented behaviours when compared to average-achieving counterparts. When compared to a matched comparison group used in the original study ($n=10$) this group of underachieving students ($n=9$) showed significantly higher incidences of performance-oriented behaviours ($U=16.500$, $p= 0.012$ $r=-0.53$) (See Pino-Pasternak et al, 2010).

The selected children (5 girls/4 boys; age range = 7.2 to 10.6; mean age = 9.5) attended 3rd and 4th grade classrooms and, as noted, they were all achieving below the average of their class groups in curriculum-based assessments of math and literacy. Parental participation involved 5 mothers and 4 mother–father dyads. Parents’ educational levels ranged from completed secondary education to graduate degrees, with the majority of the parents having completed undergraduate degrees or vocational courses. Analyses using non-parametric statistics revealed that children’s incidences of MO and PO did not differ on the basis of children’s gender, family participation (one parent vs. two parents), and parental education (university degrees vs. secondary/vocational degrees).

Parent-child activities and procedures

Two homework-like activities in the area of literacy and 2 in the area of numeracy were the focus of the present analysis. Activities were designed in collaboration with classroom teachers and were commensurate to typical homework in terms of curriculum-based content knowledge and difficulty level. However, because they were designed as part the original study (Pino-Pasternak et al., 2010), they also included prompts and questions that aimed at encouraging a metacognitive approach to the tasks. The focus of prompts was metacognitive in nature and did not specifically address children's motivational orientation (See Table 2).

--- INSERT TABLE 2 ABOUT HERE ---

Activities took place at home (n=4) or at school (n=5) depending on the families' preference. At the start of every session, the researcher (author) spent time with the families going through the materials and answering questions about the activity. She left the room, having set up the video camera, once families were confident that they had understood the goals and instructions of the task. Participants were encouraged to take as much time as they thought necessary (the length of the sessions ranged from 20 minutes to 1 hour).

Preliminary analyses using non-parametric statistics revealed that children's incidences of MO and PO across the 4 activities did not differ significantly on the basis of setting (home vs. school) or curriculum area (numeracy vs. literacy). Therefore the means of MO and PO across all 4 activities were used in subsequent analyses.

Coding of children's behaviours

As noted, children's evidence of achievement motivation was categorised under two major clusters: mastery orientation (MO) and performance orientation (PO). The unit of analysis was at the utterance level (i.e., a single word or a sentence that represented a clearly distinct unit of meaning). Though the focus of the analysis was mainly on verbal behaviour, unequivocal non-verbal information was also coded (e.g., facial expressions indicative of affect, enthusiasm, or frustration; pointing gestures when selecting activities; use of proxemics to indicate engagement or lack of it).

The following behaviours were considered indicators of MO: use of self-encouragement (*I know I can do this!*); positive prognosis (*It will be easy!*); persistence in the face of difficulties (repeated attempts); self-set challenges (choice of challenging tasks); self-initiated engagement on task (readiness to start); displays of positive affect towards tasks (*This is fun!*), and attribution of performance to effort (*I worked really hard on this one*). In contrast, indicators of PO were: low ability statements/hopelessness (*I'm not good at sums*); negative prognosis (*I won't be able to do that one*); avoidance of challenge (overt selection of easy tasks); overt manifestations of negative affect towards the task (refusal to engage; frustration), and over-reliance on adult support (repeated or unjustified requests for help).

In order to assess the contingency with which parental instructional support was provided it was also necessary to investigate children's behaviours that were indicative of task understanding. Therefore, a coding scheme was developed using 5 levels of understanding ranging from *no evidence of understanding* (Level 0) to *evidence of independent understanding* of the task (Level 4) (see Table 3). The coding procedure was similar to the motivational one as it focused on children's utterances and/or distinctive non-verbal behaviour that were representative of each level.

-----INSERT TABLE 3 ABOUT HERE-----

Coding of parental behaviours

Two coding schemes were developed for the analysis of parental behaviours: One for the analysis of socio-emotional behaviours and one for the analysis of instructional behaviours. The socio-emotional scheme included six categories: demonstrations of positive affect (proximity, humour, playfulness), demonstrations of negative affect (criticism, frustration), parental responsiveness (attentiveness to child's needs and initiatives), lack of parental responsiveness (ignoring child's initiatives and needs), autonomy-granting forms of parental control (refocusing attention, limit-setting with rationale), and intrusive/psychological forms of control (physical control over activity, use of rewards and threats, withdrawal of affection).

Like the coding of children's task understanding, the instructional demand coding scheme was conceptualised as a series of levels representing different degrees of cognitive challenge embedded in the assistance provided by parents with Levels 1, 2, and 3 representing low, medium, and high cognitive demand respectively (see Table 4).

-----INSERT TABLE 4 ABOUT HERE-----

Coding parental contingency

An additional coding scheme was developed to explore the extent to which the cognitive demand of parental mediation was contingent to the children's ongoing evidence of understanding. Contingency categories were therefore operationalised as combinations of the parents' cognitive demand (Table 4) and the children's evidence of understanding (Table 3) representing dyadic units of coding (for contingency combination rules see –Pino-Pasternak et

al., 2010). Four categories of contingency were identified: Contingent Instructional Support (demand that matches or extends preceding evidence of understanding); Non-contingent UP (demand that exceeds preceding evidence of understanding); Non-contingent DOWN (demand that is too low for the preceding evidence of understanding); and Non-contingent OFF (Parent takes over the activity with no demand addressed to the child).

Coding procedure and reliability

Parent-child activities were coded in their entirety using the above-mentioned coding schemes and assisted by video coding software (The Observer XT, Noldus Information Technology). Coding schemes accounted for the presence of behaviours only and not for their duration, with coding categories being used sequentially and following the original succession of behaviours as they occurred during the sessions. Since the duration of the activities varied across cases, rates (number of coded behaviours divided by number of minutes) were computed for each case and category and used in the quantitative analyses.

To test inter-rater reliability the author trained a native Spanish speaker with a psychology degree in the use of all coding schemes using two trial sessions (not included in the present analysis). Subsequently, each coder independently coded 5 parent-child sessions (14% of the data set). Reliability was calculated separately for each coding scheme using kappa coefficients. Kappa coefficients ranged from 0.72 to 0.92 and were deemed acceptable (Fleiss, 1981). The second coder was blind to the study's question and hypotheses.

Analysis of parental-child interactions

As indicated, the analysis involved an initial quantitative layer exploring associations between children's motivation and different socio-emotional and instructional parental

behaviours as well as between-group differences in parental behaviours. Given the small sample size, the quantitative analysis was carried out using non-parametric or distribution free tests (Field, 2009).

In addition, written descriptions of parent-child interactions during each session were developed with a focus on issues that could not be captured by the micro-level coding described above. Descriptions included examples of metacognitive vocabulary, strategies, and questions used by parents, parental reactions to children's uncooperative behaviour or spontaneous engagement, and relevant comments made the participant families after the activities.

These descriptions were subsequently compiled and subjected to content analysis (Krippendorff, 2004) leading to the identification of a typology of socio-emotional and instructional parental behaviours associated with evidence of mastery- and performance-orientation on the part of the children.

Results

Table 5 presents the descriptive data for all the variables used in the quantitative analysis. The descriptive data suggests that children in the MO and PO groups showed similar motivational patterns during the assessment and intervention sessions with differences between groups reaching statistical significance only for performance orientation ($U=.000$, $p= 0.014$, $r= -0.82$) during both assessment and intervention.

---INSERT TABLE 5 ABOUT HERE----

So as to further validate the MO and PO groupings, non-parametric correlations (Spearman's Rho) between MO and PO during assessment and intervention were explored.

Results showed the presence of positive correlations between MO during assessment and intervention ($r_s = .704, p = .034$) and PO during assessment and intervention ($r_s = .857, p = .003$) suggesting that children's repertoire of motivational behaviours was indeed similar across both contexts.

Associations between children's motivation and parental socio-emotional behaviours

Table 6 presents correlations between MO and PO during homework activities and parental socio-emotional behaviours. In partial support to the study's first hypothesis significant associations were found between children's motivation and parental affect. Children's performance orientation during the intervention was positively associated with negative affect ($r_s = .751, p = .020$) and negatively associated with the presence of parental positive affect ($r_s = -.693, p = .039$). No significant correlations were found for parental responsiveness (or lack of it) and different forms of parental control.

---INSERT TABLE 6 ABOUT HERE---

Overall these results confirm already established associations between parental affect and children's motivation, particularly in the case of children who show helpless patterns (Pomerantz, Wang, & Eng, 2005). The data shows that children who showed higher incidences of performance-oriented behaviours participated in interactions where parents displayed more negative affect. However, what is not clear from these results is the direction of the influence. Given the stability of PO across the initial assessment and intervention activities, it is possible that children's behaviours might have acted as triggers of parental demonstrations of affect rather

than being a consequence of parental affect. The issue of directionality of effects will subsequently be addressed in the Discussion section.

Associations between children's motivation and parental socio-emotional behaviours

The results presented in Table 7 show that mastery orientation during the intervention was positively correlated to the presence of medium cognitive demand in the parents' instructional support ($r_s = .885, p = .002$). Though, contrary to the second hypothesis, no relationship between children's motivation and contingent instructional support was found, two distinct patterns of parental mediation emerged in the correlational analysis connecting instructional demand to contingency.

---INSERT TABLE 7 ABOUT HERE----

Parents who were more contingent in their provision of instructional support (ContIS) were also more like to challenge their children at medium (MCog $r_s = .710, p = .032$) and high levels of cognitive demand (HCog $r_s = .807, p = .009$). In contrast, parents who provided low level cognitive demand (LCog) were more likely to overfacilitate (NContD $r_s = .761, p = .017$) and take over the activity (NContOFF $r_s = .700, p = .036$).

These results are in line with extant research in parenting and scaffolding (Neitzel & Stright, 2003; Stright, Neitzel, Sears, & Hoke-Sinex, 2001) and stress the importance of exploring not only the level of cognitive challenge encouraged by parents but also at the contingency with which supports or scaffolds are provided.

In summary, the quantitative analysis confirmed some of the hypothesised relationships between motivation and parental behaviours, specifically for affect and cognitive demand. Interestingly, the analysis raised the importance of exploring associations *between* parental socio-emotional and instructional behaviours that relate to children's motivation. This issue is further explored in the next section.

Though identifying relevant associations between socio-emotional and instructional parental behaviours and children's motivation, the analysis presented here provides no further insights into the direction of effects. As argued above, given the nature of correlations, it is not possible to determine whether parental behaviours were triggers or reactions to children's evidence of motivation in the homework-like context.

Identifying a typology of parental behaviours associated with mastery- and performance-orientation

When exploring correlations between parental socio-emotional and instructional behaviours important associations between parental responsiveness, level of cognitive demand, and contingent provision of instructional scaffolds emerged. Parental responsiveness was positively associated to the presence of high cognitive demand ($r_s = .685, p = .042$) and to contingent support ($r_s = .685, p = .050$). In contrast, parental lack of responsiveness showed the reversed patterns of associations being negatively correlated to medium ($r_s = -.676, p = .045$) and high cognitive demand ($r_s = -.696, p = .037$) and being positively correlated to tendency to over-facilitate task performance (NContD $r_s = .788, p = .012$). In other words, parents who were more sensitive to children's feelings and initiatives were also more able to present instructional scaffolds in a way that assisted and further challenged their children's cognition.

Patterns of parental behaviours associated with children's homework motivation were further explored through a qualitative lens. As noted, qualitative descriptions of each participant family across the 4 parent-child activities were subjected to content analysis leading to the identification of recurrent socio-emotional and instructional parental behaviours associated with different motivational patterns. Parental behaviours were included in this typology if they were prevalent among the members of each motivation group and if they were significant in changing and/or triggering children's motivational responses. This typology of behaviours is presented in Table 8 and it is organised into two groups: Mastery-associated behaviours and Performance-associated behaviours. For each of these groups, socio-emotional and instructional behaviours in response to children's differing willingness to engage in the activity are described. This section will elaborate further on the behaviours presented in Table 8 and will present excerpts of parent-child dialogue that best exemplify these behaviours. The first two examples correspond to children who were part of the mastery-oriented group, while the second two excerpts correspond to children who were part of the performance-oriented group.

---INSERT TABLE 8 ABOUT HERE---

Mastery-associated behaviours

As indicated in Table 8, parents of children who showed greater evidence of mastery orientation were, in general, emotionally sensitive to their children's ideas and feelings, enjoyed the activities, encouraged their children's independence, and were skilled scaffolders of their children's learning. In terms of their instructional skills, they sustained a medium to high level of challenge adjusting it accordingly to their children's ongoing performance; they used cognitive and metacognitive vocabulary by modelling strategies and using self-directed speech; and they

provided the necessary structure for the child to complete the activity by focusing attention on relevant task sub-goals and facilitating low-level activities such as note taking. These parents were also skilled in responding to their children's frustration towards failure or unwillingness to engage in the tasks. They increased their level of support in response to enhanced difficulty, they modelled resilience by laughing at own mistakes, and they made explicit the value and applicability of the skills learned through the tasks.

The following two excerpts exemplify some of the above-mentioned behaviours illustrating the interactive dynamics of cases 2 and 3 during Activity 4 (design word math problems). While the first excerpt illustrates parental supportive strategies and encouragement of independent performance on the part of the child, the second excerpt exemplifies behaviours enacted by a father to encourage engagement in cognitively challenging activities.

Case 2 (5:50 – 9:40): Respectful monitoring and encouragement of independent performance

Child (C): "My turn!" (self-initiated engagement)

Mother (M) & Father (F): (quietly observe while the child is writing)

M: "That's lovely hand writing, well done" (contingent praising)

M & F: (continue waiting and observing – physical proximity)

F: "Jasmine is an acrobat!" (reading what the child has written with enthusiasm – monitoring)

C: (smiles and continues) (sustains engagement on task - continues writing)

M & F: (wait and monitor what the child is writing- physical proximity)

F: "9 circuses?" (monitoring question – child is supposed to use double digits in her statement)

C: " Oh, I made a mistake!" (child corrects)

M & F: (continue waiting until the child finishes)

M: “Can you read it to me please?” (monitoring question)

C: (reads) “Jasmine is an acrobat at the local circus. The circus workers are all going to a circus convention with 10 other circuses. If each circus has 99 workers, how many people will attend the convention?”

M: “That’s a fantastic problem statement!” (positive feedback and praising)

This excerpt shows the significance of providing children with sufficient time to elaborate and engage with their ideas. As shown here, the parents encouraged independent performance by waiting (the sequence lasts 3:50 minutes), providing encouragement in the form of praise and positive feedback, and monitoring the quality of performance by asking questions.

Case 3 (8:40-10:25): Encouraging engagement in cognitively challenge

Father (F): “Let’s try to create a problem with two different types of sums at least. If we can do more, even better!” (father is holding the pencil ready to take notes- taking over low level aspects of task while encouraging cognitive challenge)

Child (C): (nods in agreement and starts dictating) “Martin the mouse...” (child laughs- the father’s name is Martin)

F: (laughs-reciprocates and writes) (parental responsiveness and positive affect)

C: “Ok, Martin the mouse had 20 cookies...”

F: “Hang on a minute, why don’t we choose a bigger number?” (encouraging challenge)

C: “Ok, it had 2,000 cookies”

F: “How about 5,350 cookies?” (encouraging challenge)

C: “Nooo!”

F: “Come on, let’s make it more interesting” (smiles) (sustained encouragement and positive affect)

C: “Ok” ... (continues dictating)... “his mom gave him another 5,350 cookies”

P: “The same amount?” (monitoring question)

C: “Yes”

This excerpt illustrates a number of parental behaviours associated with mastery orientation. The interaction is characterised by positive affect reflected in jokes and playful interactions, a supportive climate under which the child appears to be comfortable to engage in the cognitive challenges suggested by the father. In addition, this excerpt shows how the parent facilitates the child’s engagement in the elaboration of the problem statement while taking over the less demanding note-taking part of the task.

As also illustrated in the examples, children in these two cases were engaged with the activities and were responsive towards parental initiatives, contributing this way to sustaining the positive character of the interactions.

Performance-associated behaviours

In contrast, parents of children who showed greater incidences of performance orientation, readily reacted to their children’s unwillingness to engage in the tasks, increasing the use of intrusive control, engaging in over-facilitation of performance (e.g., providing answers), and criticising their children. At the same time, these parents were prone to ignoring their children’s signs of engagement and were less skilled in mediating partial forms of understanding (see Table 8). The examples presented below show cases 11 and 13 interacting with their mothers during Activity 2 (use of conceptual maps).

Case 11 (4:04 – 4:54): Failure to respond to and scaffold the child's ideas

Mother (M): “Shall we write down the ideas?” (taking activity sheet away from the child – intrusive control)

Child (C): “I will write!” (readiness to engage)

M: “Will you?” (responds and returns the activity sheet back to the child)

M: “So, the question says: When is it helpful to use conceptual maps?” (no pause) “I think the first thing we need to understand is that a conceptual map is a special type of text”

C: “That should go in brackets”

M: “No” (lack of responsiveness – failure to scaffold further elaboration)

C: “Yes”

M: “No. It is important to be clear about what I’m telling you” (sustained lack of responsiveness)

C: “OK” (begins writing)

M: (touching the child’s hand) “I’m not telling you to write it down just now” (intrusive control)

M: “It is a category of text, like the narratives where everything is written as one piece” (over-facilitation)

M: “When is it helpful to use a conceptual map?” (shift to metacognitive question)

C: “When...”(interrupted by the mother) (lack of responsiveness – interruption)

M: “When we want to categorise or put things into groups” (over-facilitation, provision of answer)

C: “Yes”(begins writing)

This excerpt shows heightened levels of parental control in addition to lack of responsiveness towards child’s ideas. The use of controlling practices is evidenced in verbal and

non-verbal behaviours of the mother. It noteworthy how the child's initiative in relation to the activity appears to be curtailed by the mother's failure to pick up on his contributions.

Case 13 (3:00 -5:17): An example of low cognitive demand

Mother (M): "What are the main characteristics of a conceptual map?" (Question presented in the activity sheet)

Child (C): "They are long?" (Evidence of poor understanding)

M: "I think they are divided in groups" (over-facilitation, provision of answer)

M: (writes the answer)

C: (looks away, becomes distracted)

M: "Come on, pay attention" (subsequently mother engages in extended explanation about conceptual maps)

C: (observes and listens)

M: "What other characteristic do you notice?" (metacognitive question)

C: (pause)

M: "It uses drawings and arrows" (over-facilitation - provision of answer)

M: (continues writing)

Much like the previous excerpt, this interaction is characterised by the lack of opportunities for the child to engage in the activity, with the mother taking control over the task and failing to provide sufficient time for the child to reflect on the questions. Both examples show how in these cases children became observers rather than active participants in the task.

The outcomes of the qualitative analysis enrich the understanding developed through the quantitative layer and provide detailed illustrations of the types of parental behaviours that were associated to different patterns of motivation on the part of children. Both analyses highlight the relevance of positive affect, emotional responsiveness, cognitive challenge, and contingent instruction as being related to mastery orientation. Interestingly the findings also raise the importance of exploring parental behavioural dimensions together rather than in isolation.

Discussion

This study used an observational lens to explore associations between socio-emotional and instructional parental behaviours and children's mastery and performance orientation in homework-like activities.

In relation to the study's first hypothesis, the quantitative analysis revealed expected associations between motivation and parental affect, but no direct relationships with parental responsiveness and control. The qualitative analysis, however, showed that the latter two behavioural dimensions were indeed connected to children's task motivation and engagement (as evident in the examples). Though the absence of statistically significant associations between children's motivation, parental responsiveness, and control might be explained by the limited sample size and the likelihood of Type 2 errors inherent to non-parametric statistics (Field, 2009), it is also possible that both responsiveness and parental control might be better understood as clusters of cognitive and socio-emotional behaviours. As the data from the study suggests, parents who were socio-emotionally responsive to their children were also more challenging and contingent in their mediation, with might have translated into lower levels of control.

In relation to the second hypothesis, the quantitative analysis confirmed associations between mastery orientation and medium levels of cognitive demand. Though no direct

associations with instructional contingency were identified, these two categories were associated with each other, showing that parents who were more cognitively challenging were also likely to provide that challenge in a contingent fashion. These associations were also evident in the qualitative analysis of parent-child interactions.

Overall, the quantitative and qualitative findings partially confirmed the study's hypothesis showing the significance of exploring instructional as well as socio-emotional parental behaviours related to children's motivation. In line with recent research (Carr & Pike, 2012), this study showed the presence of positive correlations between observed responsiveness, cognitive demand, and contingent scaffolding. In addition, the qualitative analysis suggested previously argued associations between intrusive control and performance-avoidant motivation (Grolnick, 2003).

The findings of this small-scale study therefore not only confirm extant and more robust research on parental behaviours associated with children's learning and engagement in academic activities (Mattanah et al., 2005; Neitzel and Stright, 2003; Pomerantz, Grolnick, & Price, 2005; Salonen et al., 2007) but also contribute to this body of literature by suggesting that parental socio-emotional behaviours might be *necessary* but not *sufficient* to explain children's motivational patterns, highlighting the relevance of further exploring the role played by the quality of parental instruction in this development and the interactions between parental socio-emotional and instructional behaviours.

Study's limitations

In addition to obvious limitations inherent to a small sample size, it is relevant to acknowledge other shortcomings of this study that might inform future directions in this area of research.

The first one concerns the categorisation of children's motivation into mastery and performance only. As noted previously, research into goal orientation has identified categorisations that involve valence (approach vs. avoidance) as well as orientation (Elliot, 2006). Though we have argued here that a two-category model was age appropriate and parsimonious when relying on behavioural evidence only (Fulmer & Frijters, 2009), it is recognised that this broad categorisation might have prevented the identification of relevant nuances. Future studies should include the approach-avoidance dimension as well as accounting for further distinctions between performance-avoidance and work-avoidance (Wigfield & Cambria, 2010). In reference to this point, it would also be important to involve tasks able to capture evidence of children's goals in addition to behavioural indicators of motivation (Day & Burns, 2011; Smiley & Dweck, 1994), for example, by embedding increasing levels of challenge in academic tasks and using on-task interviews.

A second limitation concerns the issue of directionality of effects. Studies exploring determinants of parenting have demonstrated that what parents do is to an important degree determined by their children's behaviour and personality (Pomerantz & Eaton, 2001; Roskam & Meunier, 2012). As suggested in the typology of parental behaviours presented here, parents of the participant children reacted differently to children's varying degrees of willingness to engage in the activities, suggesting that children indeed played a role in triggering parental responses. The strict focus on parental assistance presented in this study constitutes a limitation that should be addressed in the future by employing methods that account for the transactive nature of the socialisation of achievement motivation. Literature in child-caregiver synchrony (Feldman, 2012; Harrist & Waugh, 2002) might be a possible lens through which to explore reciprocal interactive processes associated with children's motivation. In fact, the findings of this study provide some support to this approach as evident the relationships established between responsiveness and

contingent support, which highlight the potential significance of parent-child reciprocity. The use of software assisted data-mining procedures and quantitative forms of sequential analysis can therefore be critical in further investigating interactive patterns associated to the social construction of motivation (Bakeman & Quera, 2011).

From a methodological perspective, the study could be improved by exploring genuine homework situations. As previously indicated, the activities analysed in this study included a series of metacognitive prompts that, though not related to motivation specifically, might have influenced the behaviours of parents and children. In terms of analysis, the lack of significant correlations between children's motivation, responsiveness and parental control calls for further exploration and potentially coding refinement. Larger and more representative samples should enable further quantitative discrimination of behavioural dimensions as well as the identification of relevant clusters of parental behaviours.

Implications

This study has stressed the value of conducting an in-depth observational analysis of parent-child interactions in homework-like contexts. Through the joint use of micro-level coding and qualitative descriptions this study has demonstrated that multiple dimensions of parental behaviour can be studied and illustrated through rich examples. However, it is possible to question the impact of the study's findings by arguing that despite positive parental forms of assistance those children showing higher incidences of mastery orientation were still underachieving at school. In response to this issue it is argued that an explanation into children's academic achievement should consider specificities of the learning context. The Chilean educational system, where the data was collected, is characterised by frequent and undifferentiated curriculum-based assessments and class promotion dependent on graded work,

all practices that are likely to enhance the generation of performance goals particularly on children who require additional support (Nolen, 2011). It is therefore possible that though parenting positive practices might have acted as an insulating factor protecting children's motivation in the homework context, they might have not had an impact on children's motivation and academic performance in the classroom context. This issue again provides an interesting avenue for further research.

From a practical perspective, the methods used in this study have the potential to be transferred to parent and teacher education programmes. Video observation and the use of video-stimulated recall discussions can be an invaluable tool for families and practitioners, allowing them to identify critical incidents and assess how different interactive features can lead to qualitative variations in children's motivation and task engagement (Feldman, 2012).

This study has pointed out the need to continue the investigation of multiple behavioural dimensions of parenting, their antecedents, as well as their transactional nature. The findings, despite their limitations, raise interesting questions about the connections and relative importance of different socio-emotional and instructional behaviours and, at the same time, suggest that there is a strong argument to continue this line of research at larger scales.

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Table 1. Rates* of mastery-oriented behaviours (MO), performance-oriented behaviors (PO), and motivational composite (MotCOMP) during initial assessment activity

Case number	MO	PO	Mot COMP**
1	0.73	0.13	0.60
2	1.31	0.75	0.56
3	0.58	0.16	0.42
4	0.59	0.18	0.41
Mdn	0.66	0.17	0.49
5	0.67	0.60	0.07
6	0.71	0.65	0.06
7	0.94	0.94	0.00
8	0.55	0.65	-0.10
9	0.33	0.44	-0.11
10	0.50	0.63	-0.13
Mdn	0.61	0.64	-0.05
11	0.20	1.27	-1.07
12	1.00	2.07	-1.07
13	0.19	1.38	-1.19
14	0.89	2.58	-1.68
15	0.12	2.12	-2.00
Mdn	0.20	2.07	-1.19

* Rates: Number of behaviours per minute** Negative values indicate prevalence of performance-oriented behaviours

Table 2. Description of homework-like activities *

Activity	Activity Goals
<p><i>Activity 1:</i> Families were presented with 5 examples of different types of texts (e.g. maps, recipes, fiction) and were prompted to think about purposes for reading them and suitable strategies to understand them and recall the information in them</p>	<ol style="list-style-type: none"> 1. Share prior knowledge about purposes of reading, different text formats, and helpful strategies to understand and recall written information 2. Develop and enact a plan to target reading comprehension activities 3. Self-assess performance during the session and think about opportunities for transfer
<p><i>Activity 2:</i> Families were asked to select 1 out of 3 text choices (different in format) and were asked to jointly develop a conceptual map that would organize the most important information in the text</p>	<ol style="list-style-type: none"> 1. Identify characteristics and benefits of conceptual maps 2. Develop a conceptual map on the chosen text 3. Self-assess performance during the session and think about opportunities for transfer
<p><i>Activity 3:</i> Families were presented with 2 examples of word math problems, were</p>	<ol style="list-style-type: none"> 1. Share prior knowledge about the structure of word math problems and suitable strategies to solve them 2. Develop and enact a plan to target the problems given

<p>prompted to solve them, and think about the strategies used and how well they worked</p>	<p>3. Self-assess performance during the session and think about opportunities for transfer</p>
<p><i>Activity 4:</i> Families were asked to create math problems statements defining features like number size, number of steps, and calculations types</p>	<ol style="list-style-type: none"> 1. Create and solve math problems 2. Think about the importance of number size, number of steps, and types of calculations when creating a problem 3. Self-assess performance during the session and think about opportunities for transfer

* For detailed specific examples of the activities see (reference omitted)

Table 3. Coding scheme of children’s evidence of task understanding

Code	Description of behaviour
Level 0	The child does not provide an answer that allows the assessment of his/her understanding of the task or of the preceding parental mediation
Level 1	Performance is indicative of poor or no understanding of the task or of the preceding parental mediation. Responses are inaccurate or irrelevant
Level 2	Performance is indicative of partial understanding of the task or of the preceding parental mediation. Responses are accurate but incomplete or involve hesitation on the part of the child
Level 3	Performance is indicative of clear understanding of the task or of the preceding parental mediation. Responses are accurate and complete
Level 4	Independent evidence of task understanding that is not prompted by parental mediation

Table 4. Coding of parental instructional demand

Code	Description of behaviour
Level 1 Low Demand	Parents read instructions, over-facilitate access to materials, pose low-level questions (e.g., constrained choices) and provide answers
Level 2 Medium Demand	Parents provide scaffolds for the child to understand and perform the task with their support. E.g., they connect content to meaningful experiences, break the task into manageable sub-goals, and assist with unknown vocabulary or low-level aspects of the task (note-taking)
Level 3 High Demand	Parents use questions to activate prior knowledge, encourage planning, encourage performance monitoring, and strategy use. E.g., <i>“Have we done anything like this before?” (Activating knowledge)</i> <i>“How are we going to go about this problem?” (Planning)</i> <i>“How are you going to make sure this answer is correct?”</i> <i>(Monitoring)</i> <i>“What would be a good way to target this sum? How do you usually do it with Ms...?” (Strategy use)</i>

Table 5 Median rates for all variables in MO (n=4) and PO (n=5) groups

	MO	PO	MO	PO	PPA*	PNA*	PR	PLR	PPC	PNC	LCog	MCog	HCog	ContIS	NCont	NCont	NCont
	Ass	Ass*	Act	Act*											UP	D	OFF
MO	.66	.17	.26	.14	.80	.03	.95	.22	.30	.13	2.37	3.20	.70	2.20	.04	.74	.20
PO	.20	2.07	.14	.46	.25	.18	.81	.36	.49	.17	2.73	1.96	.66	1.86	.07	1.11	.20

* Significant differences between the two groups using Mann-Whitney Tests ($p \leq .05$)

MOAss Mastery Orientation during Assessment; **POAss** Performance Orientation during Assessment; **MOInt** Mastery Orientation during parent-child Activities; **POInt** Performance Orientation during parent-child activities; **PPA** Parental Positive Affect; **PNA** Parental Negative Affect; **PR** Parental Responsiveness; **PLR** Parental Lack of Responsiveness; **PPC** Parental Positive Control; **PNC** Parental Negative Control; **LCog** Low Cognitive Demand; **MCog** Medium Cognitive Demand; **HCog** High Cognitive Demand; **ContIS** Contingent Instructional Support; **NContUP** Non-Contingent UP; **NContD** Non-contingent Down; **NContOFF** Non Contingent OFF.

Table 6. Correlations between MO, PO and parental socio-emotional behaviours

	MOAct	POAct	PPA	PNA	PR	PLR	PPC	PNC
MOAct								
POAct	-.363							
PPA	.369	-.693*						
PNA	-.468	.751*	-.859**					
PR	.286	-.097	.364	-.597				
PLR	-.516	-.002	-.466	.279	-.544			
PPC	-.534	-.039	-.077	.329	-.200	-.058		
PNC	.258	.188	-.348	.529	-.654*	.039	.081	

MOInt Mastery Orientation during parent-child Activities; **POInt** Performance Orientation during parent-child activities; **PPA** Parental Positive Affect; **PNA** Parental Negative Affect; **PR** Parental Responsiveness; **PLR** Parental Lack of Responsiveness; **PPC** Parental Positive Control; **PNC** Parental Negative Control

* p <. 05 ** p <.01

Table 7. Correlations between MO, PO and instructional parental behaviours

	MOAct	POAct	LCog	MCog	HCog	ContIS	NContUP	NContD	NContOFF
MOAct									
POAct	-.363								
LCog	.137	.183							
MCog	.885**	-.410	-.112						
HCog	.236	-.367	-.764**	.528					
ContIS	.512	-.452	-.342	.710*	.807**				
NContUP	-.166	-.055	-.689*	.097	.707*	.406			
NContD	-.369	.034	.761*	-.522	-.617	-.386	-.386		
NContOFF	.475	.033	.700*	.198	-.522	-.357	-.510	.380	

MOInt Mastery Orientation during parent-child Activities; **POInt** Performance Orientation during parent-child activities; **LCog** Low Cognitive Demand; **MCog** Medium Cognitive Demand; **HCog** High Codnitive Demand; **ContIS** Contigent Instructional Support; **NContUP** Non-Contingent UP; **NContD** Non-contingent Down; **NContOFF** Non Contingent OFF.

* p <.05 ** p<. 01

Table 8. Typology of mastery-associated and performance-associated behaviours

	Mastery- associated behaviours		Performance-associated behaviours	
	Socio-emotional behaviours	Instructional Behaviours	Socio-emotional behaviours	Instructional behaviours
In response to child's engagement on task	<ul style="list-style-type: none"> - Positive affect towards child (e.g.: physical proximity, use of humour, playfulness) - Positive appraisals of task (e.g.: positive comments, evidence of enjoyment) - Praise in response to child's efforts and signs of task mastery 	<ul style="list-style-type: none"> - Sustained and extended cognitive demand in relation to the activity - Variety of mediational strategies (e.g., modelling strategic behaviour, providing informative feedback, relating task to past experiences) - Division of the task 	<ul style="list-style-type: none"> - No evidence of task enjoyment or overt negativity - Failure to acknowledge and praise child's efforts and signs of task mastery - Failure to provide sufficient time for child to express ideas and initiatives (e.g., 	<ul style="list-style-type: none"> - Over-facilitation of performance (e.g., unsolicited provision of answers) - Taking over cognitively challenging aspects of the task while engaging the child at low level (e.g., Child writes the parent's thoughts)

	<ul style="list-style-type: none"> - Support for child's initiatives and choices 	<ul style="list-style-type: none"> into manageable sub-goals - Facilitation of low-level aspects of the task (e.g., taking notes) while encouraging child reflection - Use of metacognitive vocabulary (e.g.: Planning, checking, evaluating) - Encouraging independent problem solving 	<ul style="list-style-type: none"> interrupts the child's discourse or dismisses child's ideas) 	<ul style="list-style-type: none"> - Difficulties scaffolding progression towards more complex understanding (e.g., Providing an answer immediately after posing a metacognitive question) -Use of a "lecturing" style with little opportunities for child independent performance
In response to child's unwillingness to engage	<ul style="list-style-type: none"> - Responsiveness towards feelings of 	<ul style="list-style-type: none"> - Sustained level of cognitive challenge 	<ul style="list-style-type: none"> - Failure to respond or negative reactions to 	<ul style="list-style-type: none"> - Immediate decrease in cognitive demand

<p>on task or frustration</p>	<p>frustration</p> <ul style="list-style-type: none"> - Use of indirect forms of control (e.g.: ignoring off-task behaviour and refocusing on activity) 	<p>while providing additional scaffolds</p> <ul style="list-style-type: none"> - Stressing task value, relevance, and application in other contexts 	<p>child's frustration</p> <ul style="list-style-type: none"> - Overt criticism of performance and focus on deficient aspects of the task - Use of intrusive and psychological forms of control (e.g., manipulation of task materials and threats to withdraw privileges in response to child's unwillingness to engage) 	<ul style="list-style-type: none"> - Presence of self-defeating comments by the adult (E.g., "I'm not very good at this") - Presence of performance-oriented comments (e.g., "<i>This will be useful for your test on Monday</i>")
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