UNIVERSITY OF WEST LONDON
The Career University

UWL REPOSITORY

repository.uwl.ac.uk

Becoming self-regulated: patterns of parenting in the lives of professionals who are highly self-regulated learners

Tiniakou, Evangelia, Hirschler, Tim, Endedijk, Maaike and Margaryan, Anoush ORCID logoORCID: https://orcid.org/0000-0002-1740-8104 (2018) Becoming self-regulated: patterns of parenting in the lives of professionals who are highly self-regulated learners. Journal of Self-regulation and Regulation, 4. pp. 6-42. ISSN 2365-8959

10.11588/josar.2018.0.49364

This is the Accepted Version of the final output.

UWL repository link: https://repository.uwl.ac.uk/id/eprint/5272/

Alternative formats: If you require this document in an alternative format, please contact: open.research@uwl.ac.uk

Copyright:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy: If you believe that this document breaches copyright, please contact us at open.research@uwl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Rights Retention Statement:

Paper accepted for publication in the Journal of Self-Regulation and Regulation (acceptance date 28 June 2018)

Becoming self-regulated: Patterns of parenting in the lives of professionals who are highly self-regulated learners

Evangelia Tiniakou, Tim Hirschler, Maaike Endedijk
University of Twente, Netherlands

Anoush Margaryan*
University of West London, UK

*Corresponding author, anoush.margaryan@gmail.com

Abstract

Self-regulated learning has become a prominent form of learning, both in the workplace and in educational institutions. Self-regulated learners are able to strategically plan, monitor, evaluate and modify their learning practices and goals. Previous studies revealed school factors which can affect students' ability to self-regulate their learning. However, more research is needed in order to identify out-of-school factors which can contribute to someone becoming a highly self-regulated learner as an adult. One such key factor is parenting style, in particular, parental involvement in and encouragement of children's learning. The purpose of this exploratory study is to investigate patterns of parenting styles in childhood and adolescence of highly self-regulated professionals that might have had an impact on the development of these professionals' self-regulatory skills. In order to identify such shared factors, their life histories were explored through in-depth biographical interviews (n=39). Parental involvement and especially maternal involvement, parental positive attitudes towards learning and autonomy support and freedom were found to be recurring common experiences in the majority of life histories of these highly self-regulated learners. Based on our findings, we hypothesise a set of parental style factors that may contribute to the development of self-regulatory learning skills, to be investigated in future research: parental support and encouragement of (i) personal interests, family activities and structured routines; (ii) education and early literacy development; and (iii) independence and freedom of choice.

Keywords

Self-regulated learning; adult learning; parenting styles; biographical interview; learning in childhood

1 Introduction

Knowledge workers in business, government, and academia are expected to take an active and responsible role in their professional development. This requires the ability to effectively direct and regulate their learning. Self-regulated learning (SRL) abilities facilitate the process of gaining new knowledge and skills and are therefore considered to be a core capability of professionals (Margaryan et al. 2013; Sitzman/Ely 2011). Self-regulated learners "have control over their own learning and can direct cognition and motivation to achieve a specific learning goal" (Loyens et al. 2008: 416). These learners are "proactive in their efforts to learn because they are aware of their strengths and limitations and because they are guided by personally-set goals and task-related strategies" (Zimmerman 2002: 65). An improved understanding of the conditions conducive to the development of SRL skills could benefit both employers and educational institutions. It can also help advance SRL research by allowing us to formulate hypotheses about the environmental, intrapersonal and interpersonal factors that can influence the process of developing the necessary skills, and characteristics in order to become a highly self-regulated learner.

Factors relevant to the development of SRL skills include external, environmental variables that can be identified within an individual's life course and, specifically, during the childhood. For example, previous research has shown that school factors can affect young children's SRL skills (Zimmerman 2002). Teaching strategies, in particular, those aimed at strengthening learners' self-management skills, autonomy, and self-reliance have also been shown to enhance children's SRL skills (Boekaerts/Corno 2005). In contrast, out-of-school factors that may also potentially influence SRL, have been under-researched and under-theorised. In particular, the role of the learners' families in the development of their self-regulatory skills during childhood and adolescence have not been well-understood (Purdie et al. 2004).

Parental influence is one such key out-of-school factor that may impact the development of SRL skills in childhood and adolescence (Grolnick/Ryan 1989; Steinberg 2001). Although children and adolescents are exposed to a range of different environments which affect their development, the parental influence remains highly important but under-researched and under-theorised. The purpose of this paper is to report the findings of an exploratory study investigating the potential role parental involvement may play in someone becoming a highly self-regulated learner.

First, we review the key previous literature on the factors influencing the development of SRL skills and formulate key research questions to guide our study. The literature review presents two areas of research related to the development of SRL skills. First, some general factors influencing the development of SRL skills will be addressed. Second, some parental factors, in particular, parental attitudes towards learning; autonomy support; parental involvement; parental authoritativeness vs. authoritarianism; and socioeconomic characteristics will be discussed in relation to the development of SRL. We then describe our overall methodological approach and specify

the methods, instruments, and procedures used. Subsequently, we present and discuss our findings, formulating a set of hypotheses and recommendations to guide future research.

2 Literature review

There is a large body of literature on self-regulation of behaviour and of self-regulated learning more specifically, developed within different disciplines and their branches such as educational, cognitive, work and clinical psychology, cybernetics, or adult and workplace learning (e.g. Boekaerts et al. 2005; Jossberger 2010; Kanfer et al. 2008; Locke/Latham 2013; Smith 2009; Vancouver/Day 2005; Zimmerman 2006). A recent comprehensive, meta-analytic review identified at least seven different theories of SR/SRL and 16 different key constructs of self-regulation (Sitzmann/Ely 2011). The main theories include control theory, goal setting theory, action regulation theory, resource allocation theory, self-efficacy theory and the phase models of SRL such as Zimmerman's three-phase model of SRL (Zimmerman 2005) and Pintrich's four-phase model of SRL (Pintrich 2000). Whilst the former theories have largely focused on the explanation of self-regulated behaviour more broadly, the phase models have been especially influential in the analysis of learning behaviour more specifically. In particular, Zimmerman's three-phase model of SRL has been especially influential in the field of education this paper is grounded in.

Self-regulation of learning refers to ". . . self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman 2000: 14). In Zimmerman's influential model, self-regulated learning is conceptualised as a three-phase process, whereby "the forethought phase refers to processes and beliefs that occur before efforts to learn; the performance phase refers to processes that occur during behavioural implementation, and self-reflection refers to processes that occur after each learning effort" (Zimmerman 2002: 67). Consequently, the term 'self-regulated learner' describes people who take responsibility for their learning outcomes to acquire desirable skills, are capable of setting learning goals and reflecting on their learning process strategically modifying their goals and processes when needed. Research has shown that students who are highly self-regulated produce better learning outcomes in their studies (Zimmerman 2005). Similarly, previous studies in adult learning contexts have shown that learners who are highly self-regulated tend to have better learning outcomes related to their work (Gijbels et al. 2010).

2.1 General factors influencing the development of SRL

Literature addresses a range of factors critical to the development of self-regulatory learning skills. Four main categories of factors which have been studied in relation to self-regulation are: school factors such as teachers' practices; individual characteristics such as self-conceptions; socioeconomic characteristics; and out-of-school factors such as parental practices. In particular, previous research has shown that SRL skills

can be acquired in school and teachers can facilitate this process by teaching self-regulatory learning strategies (Pintrich 1999). It has also been shown that teachers can enhance students' motivation and self-efficacy (Zimmerman 2002). In particular, teachers can guide students to learn how to plan, monitor and evaluate their own learning or support students in establishing achievable goals and choosing appropriate learning strategies (Jossberger et al. 2010).

Next, to the role of teachers, learners' individual characteristics have been investigated by Wolters et al. (1996) who indicated that a learner's goal orientation has a positive effect on their self-efficacy. Self-efficacy refers to an individual's belief that they are competent and able to learn and achieve their goals and is considered to be a significant predictor or SRL (Bouffard-Bouchard et al. 1991; Zimmerman 2000). Another individual factor which has been found to contribute to the development of SRL processes is learners' intrinsic motivation in relation to their learning tasks (Pintrich 1999).

Regarding socioeconomic characteristics, marital status of parents has been shown to influence children's development. In particular, compared to children of non-divorced parents, children of divorced parents have been shown to be less likely to develop high self-esteem, another predictor of self-regulation skills (Brubeck/Berr 1992; Lambird 2006). However, the literature suggested that children of divorced parents may also develop self-regulation skills as an emotional response in order to prevent or overcome stressful situations (Lengua et al. 1999).

In terms of the out-of-school experiences, Berliner (2009) identified several key factors of parental styles and practices which may contribute to or impede the development of self-regulation during childhood. These include parental attitudes towards learning, autonomy, parental involvement, parental authoritativeness vs. authoritarianism, and parental socioeconomic characteristics.

2.2 Parenting styles and practices

Parenting is a fundamental factor in the development of children and especially in children's acquisition of new knowledge and attitudes. Parents shape children's learning environment and they provide them with their first learning stimuli (Bornstein 2001). Spera (2005) explored parenting by distinguishing parental styles and practices such as parental monitoring, parental involvement as well as love-oriented and object-oriented parenting styles. Parental style can be defined as "a constellation of attitudes towards the child that, taken together, create an emotional climate in which the parent's behaviours are expressed" (Darling/Steinberg 1993: 488). Parental factors relevant to learning are: autonomy, parental involvement, authoritative parenting and parental attitudes. These will be briefly discussed next.

2.2.1 Autonomy

We define autonomy as the degree to which freedom is experienced to make and carry out choices. This definition is in line with the study of Ryan/Deci (2006). Autonomy

support is defined as “taking children’s perspectives and viewpoints, allowing children choices, and supporting their initiatives and problem-solving attempts” (Grolnick 2009: 165). The literature has highlighted the importance of autonomy in learning performance and learning skills development (Ryan/Deci 2000; Deci/Ryan 1985). In particular, children who are encouraged by their parents and teachers to adopt autonomous behaviour tend to have a better ability to identify their goals and develop higher levels of self-regulation and self-motivation (Chirkov/Ryan 2001; Grolnick/Ryan 1989). Additionally, existing literature shows the relationship of some parenting styles with children’s characteristics and behaviours related to SRL. In particular, parents who support autonomy, by, for example, encouraging children to complete their homework on their own and develop self-study skills, help enhance their children’s academic performance (Cooper et al. 2000). These findings point to a positive relationship between autonomy support provided by parents and children’s SRL skills development.

2.2.2 Parental involvement

Parental involvement refers to the extent to which parents are involved in the progress and the experiences of their children at school and at home (Sui-Chu/Willms 1996). Whereas autonomy support concerns the extent to which parents allow their children to solve problems and make their own choices; parental involvement focuses on those practices that show a parent’s interest, but are not necessarily related to giving space for a child’s decisions (Wong 2008). Previous research has shown that children who grew up with parents who were involved, provided them specific rules, feedback and clear expectations, were better able to solve problems on their own and were more likely to develop self-regulatory skills (Grolnick 2009). In line with this, Grolnick/Ryan (1989) found a positive relationship between parental involvement and children’s control over their school outcomes. Children who perceive more parental involvement are more likely to become self-regulated because parents offer opportunities to their children to develop self-determination and develop their own attitudes towards learning (Wong 2008). Moreover, children who are raised in an environment where routines and structured schedules are promoted by parents are more able to self-regulate their academic tasks and their lives in general (Effeney et al. 2013). Particularly, children of parents who are involved in their school life and used to form routines are more likely to self-regulate their homework. In conclusion, research has shown that there is a relationship between different types of parental involvement, such as providing resources and routines as well as showing interest in children’s learning process and the development of children’s SRL skills.

2.2.3 Parental authoritativeness vs. authoritarianism

Baumrind (1966) introduced a model distinguishing three parenting styles with respect to the type of control parents exert over children: the authoritative, the authoritarian and the permissive. This paper focuses on the authoritative and authoritarian style as these feature different ways in which parents express their expectations towards their

children; the permissive style is void of the communication of expectations altogether. Previous research has revealed a strong connection between authoritative parenting and self-regulation skills. In particular, although it is strongly related to autonomy, the main characteristic of the authoritative parenting is that parents support their expectations towards their children with rational arguments encouraging them to set achievable goals and to reach these goals on their own (Heaven & Ciarrochi 2008). As a result, children who grow up in authoritative environments tend to develop more skills and greater independence. In contrast, authoritarian upbringing where parents have non-realistic expectations from their children and where children are punished for not meeting parental expectations have been shown to cause low self-esteem (Heaven/Ciarrochi 2008; Milevsky/Schlechter et al. 2007). Additionally, it has been shown that young teenagers who grow up in authoritative home environments develop higher self-confidence and more positive self-conceptions than those who grow up in authoritarian environments (Steinberg/Darling 1994).

Regarding the roles of parents individually, previous research has suggested that mothers, in particular, seem more likely to discuss their expectations using arguments and logical reasoning (Conrade/Ho 1991), consistent with an authoritative style. Maternal authoritative behaviour, in particular, can enhance children's academic achievements and development (Beau/Carter et al. 2009), and children who are treated by their mothers with warmth tend to have higher self-esteem (Cheng/Furnham 2004). In summary, previous research showed that authoritative parenting is linked with characteristics of self-regulated learners, while authoritarian parenting does not support the development of self-regulatory/SRL skills.

2.2.4 Parental attitudes towards learning

An attitude represents the constellation of internalised perceptions and assessments that someone has about an object, a person, a group or an idea (Bohner/Dickel 2011: 392). For instance, individuals may evaluate positively or negatively different habits, different nationalities or different foods. There is a limited number of studies examining the relationship between SRL and parental attitudes towards learning. For example, Steinbach/Stoeger (2015) found that parents' attitudes specifically towards SRL influence the autonomy they provide to their children whilst learning. More generally, previous research has shown that parents' beliefs about literacy can encourage or discourage children's ability to learn how to read and write as well as their literacy development (Lynch et al. 2006). Thus, we expect that parent's beliefs about other subjects, as well as learning in a broader sense, can affect the way their children learn and develop learning skills.

2.3 Research questions

The findings of our literature review suggest that four important out-of-school factors may positively influence SRL: autonomy support, parental involvement, authoritative parenting and parental attitudes towards learning. However, as we found through the

review of the literature, the link between these parenting styles and practices and SRL skills has not been articulated in the literature yet. Therefore, a better understanding of how parental behaviours during childhood and adolescence may affect children's ability to self-regulate their learning is needed.

To this end, we set out to explore the potential role parental involvement may play in someone becoming a highly self-regulated learner. In particular, we explored shared patterns of parental involvement and influence in life histories (especially during childhood and adolescence) of adult professionals who were highly self-regulated learners. The term "pattern" is defined as an abstraction which recurs over and over again in the same or similar way and indicates how something is done or occurs under certain conditions (Alexander 1979: 181). We hypothesised that if such patterns of shared factors could be found in the life histories of these highly self-regulated learners, the patterns may provide fruitful vistas for future research to ascertain if there may be a link between these shared factors and the development of SRL skills. In other words, if similarities in parenting styles experienced by these individuals can be identified, this may suggest that those particular parental styles and practices that recur across the lives of these different individuals may have somehow contributed to them becoming highly-self regulated. Such an exploratory analysis would of course not be able to prove a causal link, let alone tell us the directionality of causation, but it might allow us to hypothesise possible (causal) links and to formulate further research questions to be addressed through more explanatory research.

To guide our explorative study, the following research question (RQ) and sub-questions were formulated:

RQ: Which recurring patterns of parenting, if any, can be identified within the life histories of professionals who are highly self-regulated learners?

Sub-RQ1: What are the common experiences, if any, regarding autonomy support?

Sub-RQ2: What are the common experiences, if any, regarding parental involvement?

Sub-RQ3: What are the common experiences, if any, regarding authoritative and authoritarian parental behaviour?

Sub-RQ4: What are the common experiences, if any, regarding parents' attitudes towards learning?

3 Methodology

3.1 Research approach

In tackling our research questions, we used an approach pioneered by the sociologist of science Harriet Zuckerman in her seminal study of Nobel Prize laureates in the United States (Zuckerman 1977). Using in-depth biographical interviews with 41 laureates, Zuckerman was able to discover a series of key shared factors and patterns in the life histories of these scientists, across their life course, from childhood to formal

education to adulthood and their scientific careers (Mortimer/Shanahan 2004). Examples of the patterns Zuckerman identified through her biographical interviews included parenting and upbringing, educational experiences, research training, mentorship and collaborations. Based on the analysis of these patterns, Zuckerman was able to develop a framework showing how advantage accumulates in science.

Similar to Zuckerman's approach, in our exploratory study, we drew on semi-structured, biographical interviews to identify shared factors in the life histories of highly self-regulated individuals. In a biographical study, the researcher collects and presents parts of life histories of the respondents. A biographical study is considered to be a type of narrative study (Leech/Onwuegbuzie 2007). Creswell (2007: 54) defined narrative studies as a method for investigating and understanding "experiences as expressed in *lived and told* stories of individuals". Semi-structured life history interviews are considered to be a powerful method for revealing information about an individual's biography (Dicicco-Bloom/Crabtree 2006). Biographical interviews, therefore, are a powerful method of examining the life histories of highly self-regulated learners and systematically comparing them among each other. As we follow individuals from their social origins, their childhood and adolescence through their formal education and their professional careers, we can catch a glimpse of the role played at each life stage by, on one hand, socially-defined attributes and environmental conditions and their personal and psychological factors, on the other.

Methodologically, one of the gaps in SRL research is that the analysis of SRL has been over-reliant on quantitative methods; and scholars have called for more qualitative research approaches to be used to better understand how self-regulation plays out in different environments (Sitzmann/Ely 2011). Another methodological limitation in SRL literature is the over-reliance on studies conducted under laboratory conditions, which resulted in our continued lack of understanding of the impact of the environment – such as other parents or other people – upon an individual's development of SRL skills. Therefore, the research approach we adopted was motivated by the need to address these gaps.

Our approach, like any other methodological approach, has both advantages and disadvantages. The key advantages are that it's a novel and powerful way of examining in a more nuanced way the impact of family experiences on the development of self-regulated learning. It applies a qualitative approach successfully used in a seminal study in a cognate discipline – sociology – providing a potentially useful way of understanding the link between the environment and the development of self-regulated learning. The disadvantages are that this method does not allow to examine the possible causal links and their directionality, only to hypothesise correlation and potential causation. However, once the potential patterns are identified, they can then be examined in further detail using more traditional methods, including quantitative surveys or laboratory experiments. Also, as any method based on retrospective, self-reported data, biographical interviews may be affected by problems associated with accuracy of recall and retrospective coherence, among others (Nisbet/Wilson 1977; Townsend/Heit 2011).

3.2 Research design, instruments and procedure

The study adopted a mixed-method, qualitatively-driven, sequential quan->QUAL design, including a questionnaire followed by in-depth biographical interview.

3.2.1. Questionnaire

A questionnaire to measure the extent to which participants exhibited self-regulated learning behaviours in their daily work was used to identify highly self-regulated individuals. A previously validated instrument, the Self-Regulated Learning at Work Questionnaire, SRLWQ (Fontana/Milligan et al. Littlejohn and Margaryan, 2015) was applied for this purpose. There is a lack of validated questionnaire instruments to measure the scope and frequency of self-regulated learning among adult professionals. The SRLWQ, which has been validated and successfully applied in a range of knowledge work context (Littlejohn et al. 2016; Milligan et al. 2015; Milligan/Littlejohn 2016), was identified as a suitable instrument to use in this study. The full questionnaire is included in Appendix 1. The questionnaire is estimated to take maximum 15 minutes to complete and comprises the following sections:

1. *Personal details* – name; year of birth; job role; organisation; country
2. *Workplace learning activities (WLA)* – 12 items, based on a typology of workplace learning activities, derived from WPL literature (Fontana et al. 2015) were included in this section. WLA were measured on a 4-point scale (0-never; 1- a few times in the past year; 2- at least once a month; 3- at least once a week).
3. *Self-regulatory learning (SRL) strategies* –This section included 41 items derived from Zimmerman's three-phase model of SRL (Zimmerman 2005): planning (goal setting, strategic planning, self-efficacy and intrinsic value of task); implementation (task strategies and techniques) and reflection (self-evaluation). These measures are detailed in Fontana et al. (2015). They were measured on a 4-point scale (0-not at all true; 1-sometimes true; 2-true most of the time; 3-always true).
4. *Email address:* An opportunity for the participants to provide their email in case they were interested in participating in a potential biographical interview.

An invitation letter describing the research and including a link to the online version of the questionnaire was circulated to various groups of professionals in a range of knowledge work domains, through various relevant channels (such as LinkedIn, internal institutional mailing lists, mailing lists of a number of professional networks the researchers had access to). As a result of the call, 160 individuals from several private and public organisations, including higher education institutions, NGOs, consultancies and international organisations, filled out the questionnaire.

Based on the scores derived from the questionnaire responses - whereby the scores on the 12 WLA and 41 SRL Strategies items were added up - the participants were assigned to three groups: low, medium and highly self-regulated learners. For the purposes of this study, those respondents who scored in the top 25 percentile on the questionnaire were considered to be highly self-regulated learners and invited to participate in a biographical interview. We do not report any results of the questionnaire responses in this paper, because in our quan->QUAL design the questionnaire was used as an auxiliary, solely for the purpose of sampling for the biographical interviews which were our main focus and our main interest.

3.2.2 Biographical interview

Following the survey, those respondents who scored in the top 25 percentile of the overall sample and who had expressed interest in participating in a follow up biographical interview were contacted by email to arrange a suitable date for the interview. Those who had agreed to an interview (39 participants) were then asked to send the interviewer relevant biographical information in advance of the interview to help the research team prepare for the interview (such as a CV, a personal/professional website, a personal/professional blog or other relevant social media profiles, such as LinkedIn profile). These materials were reviewed and summarised prior to the interview by the researcher conducting the interview.

Due to the nature of the interviews being in-depth and biographical, it was considered important to conduct them face-to-face where possible. Therefore, priority was given to individuals who were located close to the researchers' work locations in the Netherlands and the UK. It proved to be impossible to conduct all 39 interviews face-to-face, therefore, some interviews were conducted by Skype.

Each interview lasted on average 2-3 hours, and several interviews were conducted in sections over several days. The reason was two-fold: to fit the respondents' busy schedules as well as to allow the interviewer to reflect on the emergent findings and to formulate additional questions and directions to explore.

The biographical interviews were semi-structured: they included a series of pre-defined questions to probe and explore a number of key personal and environmental factors derived from the literature. At the same time, the interviewer also probed and explored emergent themes and factors that would arise during the interview. The interview consisted of open-ended, behavioural questions and questions aiming to verify respondents' experiences (e.g. *"How about, just thinking about what you just mentioned, how about parenting style of your parents, so how they were with the children? What sort of activities they would do, the interaction, were they encouraging to do certain things")*. The factors broadly spanned three stages: childhood/adolescence, young adulthood (e.g. university years) and workplace/professional life post-education. Given the theme of this paper, we only focus on the factors related to the childhood phase. The interview script and a more detailed list of factors and probes are included in Appendix 2. Examples of the pre-defined factors we examined through the interviews included:

- Environmental factors:
    - Family composition and occupation of parents
    - Close friends in childhood and adolescence and their socioeconomic background
    - Parental control, parental attitudes to learning and knowledge
    - School experiences
    - Hobbies/interests as a child
    - Access to knowledge in childhood/adolescence (e.g. access to books, libraries, etc.)
- Personal-psychological factors:
    - Personal aspirations in childhood/adolescence
    - Examples of self-regulated learning activities in childhood/adolescence
    - Self-efficacy beliefs
    - Roles models
    - Sociability/circle of friends and what was learned from them
    - Independence in thinking vs dependence on authority and how these were encouraged/discouraged by parents
    - Emotional control
    - Persistence

The interviews were audio-recorded and transcribed. A copy of the transcript was sent to the respondents to get their approval and, if necessary, to request clarifications or additional information. Participants were also given a copy of their questionnaire results and a copy of the audio-recording of their interview as courtesy.

3.3 Characteristics of the interview sample

The respondents came from a range of countries across Europe, Russia, North America, Asia and the Middle East. They represented different age groups and came from different private and public organisations, from knowledge work contexts. The key characteristics of the 39 interview respondents are summarised in Table 1. In this paper, we don't examine the role of age, gender or country on the development of self-regulation, therefore, these demographic details are not analysed but simply used here to characterise the sample.

Table 1. Key characteristics of the interview respondents (n-39)

No	Year of birth	Gender	Country	Occupation/industry
1	1977	M	Netherlands	University lecturer
2	1976	M	Netherlands	Director of an NGO
3	1971	M	UK/Sweden	Consultant in an international development
4	1977	F	Netherlands	Learning advisor in a multinational corporation

5	1965	F	UK	Freelance consultant
6	1976	F	Germany	Freelance consultant
7	1961	M	UK	Technical consultant in a company
8	1986	F	Russia/Germany	Ph.D. researcher in gender studies
9	1977	M	Belgium	University senior lecturer
10	1971	M	Netherlands	Curriculum developer
11	1972	M	Netherlands	ICT advisor in a university
12	1973	F	Russia/Israel	International sales director in a large company
13	1966	F	Scotland	University lecturer
14	1969	F	Italy/UK	eLearning consultant
15	1986	M	Austria	Freelance consultant
16	1976	F	Armenia	Director of Research in an educational centre
17	1974	M	Scotland	University senior lecturer
18	1952	F	Scotland	University lecturer
19	1979	F	Germany	University lecturer
20	1962	F	UK	University professor
21	1969	F	Estonia	Senior researcher in a university
22	1953	F	Finland	Researcher in a university
23	1980	F	Canada	Ph.D. researcher/Instructional designer
24	1982	M	Bosnia/UK	University lecturer
25	1955	F	Bosnia/UK	University professor
26	N/A	F	Singapore/Netherlands	Ph.D. researcher
27	N/A	M	UK	eLearning advisor
28	N/A	M	UK	University lecturer
29	N/A	F	Northern Ireland	University researcher
30	N/A	F	USA	Learning and Development manager in a multinational corporation
31	1979	F	UK	Ph.D. Researcher in criminology
32	N/A	F	Netherlands/UK	University lecturer
33	N/A	F	USA/Scotland	University lecturer
34	N/A	F	UK	University lecturer
35	N/A	F	UK	Ph.D. researcher
36	N/A	F	UK	University lecturer
37	N/A	M	UK	Researcher at a university
38	N/A	F	Belgium/UK	Researcher at a university
39	N/A	M	UK	University lecturer

3.4 Data analysis

The interview transcripts were initially coded using a scheme of pre-defined, theory-based codes, through Atlas.ti software. Each of the 39 interviews was cross-coded by three investigators. The coding scheme was revised several times. The initial codes included “autonomy support and freedom”, “parental involvement”, “parental non-involvement”, “authoritative”, “authoritarian”, “positive attitudes towards learning” and “negative attitudes towards learning”. In addition, the data were coded for some demographic characteristics such as parents’ education and family structure. Furthermore, several sub-codes were created to capture differences between maternal and paternal parenting styles, since in some cases they were not aligned.

The validity was ensured by, first, building the coding scheme on literature capturing multiple perspectives of the related theory and, second, by an in-depth discussion of the different categories and labels among the three investigators. The appropriateness of the codes and the literature were discussed within a broader group of four investigators.

In order to ensure reliability, a Cohen’s kappa was used to measure inter-rater reliability. Three investigators coded in pairs five random interviews (20% of the interviews) and calculated the Cohen’s kappa of the segmentation and the codes in a manual Excel spreadsheet. The average Cohen’s kappa for this reliability check was 0.75 indicating that the coding in this phase was sufficiently reliable.

The coding process was comprised of three phases. In phase one, the three investigators coded the interviews by first doing the segmentation, then using the labels of the coding scheme and afterwards testing them for reliability. For instance, the following quotation was coded as ‘parental involvement’: “*We weren't a family who had hours of in-depth discussion, but I also felt that my parents were there if we wanted to talk about things. They always took an interest in our lives and what we were doing. You know, they came to sports day, they came to plays, they participated and encouraged us to do outdoor activities and sporting things.”* In phase two, more specific, data-driven, open sub-labels for some codes were created, tested for reliability and revised accordingly. Examples are the following sub-labels created for the main label ‘positive attitudes towards learning’: “books“, “lead by example”, “highlight the importance of learning” and “homework assistance”. The reliability of the sub-labels was tested by two independent coders on the calculated required number of quotations per label using the following equation:

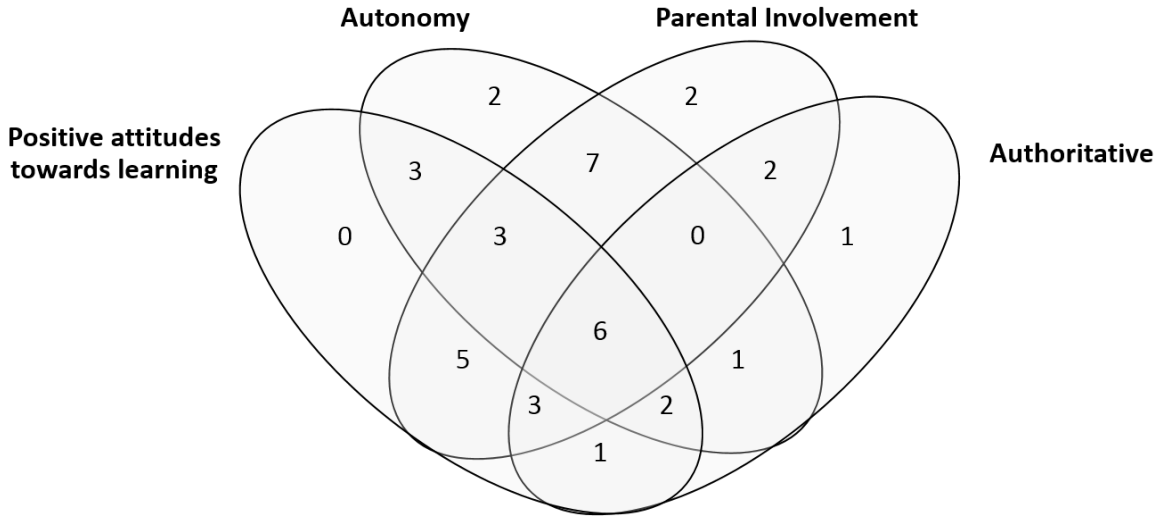
$$2 \times (n \times n)$$

The average Cohen’s kappa for this test was equal to 0.76. Finally, in phase three, the respondent-level analysis, the coded files were summarised per case. Subsequently, the frequency of the codes in the dataset was counted and the findings for each research question were summarised. Due to data loss, one interview was not used for analysis. The results of the analysis of 38 interviews are presented in the next section.

4 Results

With regards to parental styles, Figure 1 provides an overview of the number of the respondents who mentioned one, two, three or all of the four investigated parental styles. Based on the analysis, the most recurrent types of parenting were: the combination of autonomy support and parental involvement, the combination of parental involvement and positive attitudes towards learning and the combination of all four expected parenting styles.

Figure 1: Co-occurrence of responses



4.1 Autonomy support and freedom

The majority of the respondents (n=24/38) mentioned that their parents supported their autonomy and freedom, whereas four indicated no autonomy support and ten did not mention autonomy support at all. The participants who experienced parental support for autonomy and freedom indicated that, during their childhood and adolescence, they were given the opportunity to make decisions, their opinions were taken into consideration and they did not perceive pressure from their parents to follow specific directions.

The analysis of the sub-codes for this category showed that "freedom of choice" was the most frequently recurring paternal behaviour (n=15/38) and many respondents said they were encouraged by their parents to be independent (n=10/38). For instance, one of the respondents said, *"They didn't put pressure on us. So, if you look at school…it was more helping and trying to see what we needed to make sure that we can do what we needed to do. So it was supportive, I think, that's the way, very supportive in all that we did. On the other hand, I think they left us quite free in what we did. So, in choosing what we wanted to do we were free, but on the other hand if we choose something we needed to do it well."* Four out of 38 respondents related

autonomy to the trust showed by their parents and another four suggested they had no strict rules in their family environment. For example, one of these respondents said, *"My Mum is a very trusting parent and created a lot of space for us and [was] incredibly supportive."*

Four respondents out of 38 indicated examples showing that their parents did not encourage them to be autonomous. Ten respondents did not mention autonomy at all. No noticeable difference was found between autonomy support given by mothers and fathers. In summary, autonomy support, freedom of choice and independence in determining their needs and planning their own tasks and responsibilities were found to be key factors mentioned by a significant proportion of participants. Therefore, these factors could be hypothesised to potentially lead to the development of self-regulatory skills.

4.2 Authoritative and authoritarian parenting

Within this category, eleven out of 38 participants indicated examples suggesting their parents may be classified as authoritative, and ten out of 38 participants as authoritarian. Additionally, five out of 38 respondents mentioned both authoritative and authoritarian parenting and twelve out of 38 did not mention this category at all. Regarding authoritative parental style, most of the experiences shared by the interviewees indicated styles in which parents express their expectations through reasoning and rational arguments (n=13/38). Fewer examples of parental styles encouraging children to set achievable goals were observable in the data (n=6/38). As one participant explained authoritative parental style, *"…my mum, she reasoned with me about it, she would always sit down and reason with me and tell me. And what I like about her approach, she would always go and show me 'This is the future, do you want to do what I'm doing? Or do you want to be able to choose?"*

There were two categories of participants who had authoritarian parents: those who grew up in an environment with strict family rules which they had to follow (n=7/38) and those who had parents who directed and controlled their decisions against their will (n=11/38). The latter parenting style is demonstrated by the following example from an interviewee, *"From a parenting style they were an Irish Catholic family, highly religious and in some ways very dominating type of parenting style. You did what you were told to do basically or you were punished. But at the same time my Mother would spend all summer long, she would make sure that we would go to the library once a week to get books to read."*

Within our interview dataset, the distinction between authoritative and authoritarian parenting was not clearly identified and no patterns regarding differences in maternal and paternal parental styles could be identified. However, the responses of the participants showed that even though in many cases the parents were controlling and did not give their children enough space for decision-making, they were still highly involved and positive towards learning and education.

4.3 Parental involvement and non-involvement

With regards to parental involvement, 28 of 38 participants indicated that their parents were involved in their childhood and adolescent life in and out of school, making this the most recurring pattern among our interviewees. The majority of these participants grew up in environments where structured routines and family activities (n=22), support of children's interests (n=13), or homework assistance (n=7) were considered important in providing considerable support and stimulus for self-reflection: *"Well my parents, I think they tried to show us the area and have us travel a lot. […] So I remember my mum and dad would take us to the park and to picnics. All things that were affordable as well. So sometimes go, well to different playgrounds to play with the zip lines, with see-saws, the usual in play grounds. They would try and take us to the swimming pool, the local swimming pool. They would try and take us when they could afford it, to take us to see pieces of history of the area."*

Apart from family activities, 13 out of 38 participants said that their parents were involved particularly in actively supporting their interests. *"So when I mostly had interests and I'd do a little reading and there was lots of opportunity to do that and there was a lot of encouragement. So, we went to the library very often and I would pick my books, they also gave me some binoculars when I was 10 for instance to encourage me in my bird watching and those kinds of things."*

Some participants (n=7/38) also mentioned homework assistance by their parents as a type of parental involvement. *"Something I often think about with parents is if I had a maths problem and I wanted the answer for my homework I would go to my father because he would give me the answer, but he would also give me a lecture that was way above my head on the topic. […] If I really wanted to understand something though and that did happen sometimes, I would go to my Mother and she wouldn't give me the answer, but she would help me find it myself, she would really teach me."*

Ten out of 38 participants reported that their parents were not involved in their childhood or adolescent life. We hypothesise that the self-reliance they had to develop, due to the non-involvement of the parents, may have contributed to them becoming highly self-regulated learners. *"Nobody was helping me with school because before if I had some question with maths my mum always told me you can ask your father, he is good at that. And very early I understood that he's not that good and he is not able to help me with everything or he's just absent or he's just drinking and she [mother] was also [drinking], […] and so I realised ok nobody's helping me with school or with anything. So, I have to do stuff on my own."*

The analysis revealed difference between maternal and paternal involvement. In particular, no one indicated non-involvement by their mother, but five out of 38 said that their father was not involved. Furthermore, seven respondents mentioned parental involvement only on their mother's part.

4.4 Attitudes towards learning

More than half of the respondents (n=24/38) stated that the attitudes of their parents towards learning were positive, leading to this being another key common experience in the life histories of the interviewees in this study. No one mentioned any negative attitudes towards learning by their parents and 14/38 made no references to their parents' attitudes towards learning. Four key parental attitudes towards learning were observable in the data: repeatedly highlighting the importance of learning (n=14), encouraging book reading (n=10), leading by example (n=6/38), and providing the financial support to fund children's pursuit of their interests (n=3). In particular, many respondents recounted examples of their parents emphasising the importance of learning and diligent study in multiple ways. *"The value was always learning and studying a lot, they would always point it out, even though they didn't have the backgrounds"*. Ten respondents were raised by parents who enjoyed reading, were regularly visiting the library with them and gave them the opportunity to always have books available to read. *"My parents read a lot of books, not something like high-level classics […] but they read a lot of books and my parents appreciated books and reading […] In my family we had a lot of books and my parents read books to us and they bought books for us."*

Through these parental attitudes to learning the participants were supported, since their childhood years, to value and invest time and effort in learning. Many respondents who discussed their parents' attitudes towards learning said that they were inspired by their parents' stories and drew on these as examples for them to develop a life-long appreciation for learning. On the basis of these findings, we hypothesise that positive parental attitudes to learning may positively impact the development of self-regulation in learning.

Finally, some demographic characteristics regarding parents' educational background and family structure were explored. Eight respondents grew up with divorced parents and some were also partly raised by other members of the family apart from the parents. The analysis of the data on family structure and parental educational level revealed no patterns.

5 Discussion, conclusions and recommendations

The purpose of this exploratory study was, firstly, to identify family-related factors which could potentially lead to someone becoming a highly self-regulated learner and, secondly, to formulate hypotheses for future, explanatory studies to ascertain the nature and the directionality of the links between these factors and the development of SRL. To this end, similarities and common experiences of professionals who are highly self-regulated learners were analysed using the life-history, biographical interview method focusing on the common experiences related to parenting styles recurring within their life histories. Our findings suggest that there are some parenting styles that could potentially contribute to the development of SRL skills and dispositions. These

parenting styles are those combining either, autonomy support and parental involvement; parental involvement and positive attitudes towards learning and/or all four factors: autonomy support, parental involvement, authoritative parenting and positive attitudes towards learning. Our exploratory findings pave the way for future research to explore the precise role of these factors in the development of SRL skills, potentially through future correlational and longitudinal analyses.

With regards to the research questions, the following responses can be formulated on the basis of our data. The first sub-question was: "What are the common experiences, if any, regarding autonomy support?" Our findings indicate that most of these professionals who are highly self-regulated learners experienced autonomy within their family environment. The most common types of autonomy support within this sample were freedom of choice and independence. Grolnick (2009) found that children who perceive autonomy in their problem-solving attempts are more likely to be prepared to solve academic tasks and set performance goals on their own acquiring strong self-regulation skills. Similarly, Wong (2008) found association between parental autonomy support and the development of self-reliant learners who have the freedom to interpret the importance of learning in their own way, since parents who support autonomy exert less control towards homework and motivate their children to solve problems and value learning independently. In line with these previous empirical studies, our findings suggest that people who are more independent during their childhood may be more capable of self-regulating their learning in the future. Therefore, we propose the following three hypotheses to be explored in future research:

> *H1. Autonomy support and freedom provided by parents during childhood and adolescence contribute to the development of SRL skills.*
> *H2. Children who grow up in an environment with structured routines and regular family activities are more likely to become more highly self-regulated learners than children who grow up without these routines and activities.*
> *H3. Children who are given autonomy and freedom by their parents are more likely to become more highly self-regulated learners than children who do not experience autonomy and freedom while growing up.*

The second sub-question was: "What are the common experiences, if any, regarding parental involvement?" Our findings revealed that parental involvement is the most dominant (defined as the most frequently recurrent) pattern in the life histories of highly self-regulated learners. Furthermore, parental involvement or non-involvement were the only parenting styles mentioned by all participants. In particular, the majority of the respondents suggested that their parents used to organise regular family activities, creating an environment with structured routines, and that they were highly involved and supportive regarding children's interests. Previous research has shown that the development of personal, self-driven interests are predictors of high self-determination (Soenens/Vansteenkiste 2005). Additionally, this finding can be explained by the research of Effeney et al. (2013) which found that well-established study rou-

tines formed early at home with the help of parents allow children to adopt self-regulated strategies of learning whereby they can direct and plan their learning independently. Furthermore, we found an indicative association between parental involvement and parental gender. In particular, we found that in our sample, the most involved parent was the mother and in most of the families the father was the one who had heavier workload or other tasks which kept him away from home preventing closer involvement in children's upbringing. Grolnick/Ryan (1989) suggested that, compared to paternal involvement, maternal involvement may be more likely to play a more prominent role with respect to the development of self-regulatory skills in children. According to Cheng/Furnham (2004), self-esteem, which is an important characteristic of self-regulated learners, is strongly associated with maternal care. Although in this study, we cannot draw conclusions regarding the contribution of each parental gender to SRL, we propose the following hypothesis for future research:

H4. Maternal involvement is positively correlated with the development of self-regulatory learning skills.

The third sub-question was: "What are the common experiences, if any, regarding authoritative and authoritarian parental behaviour?" The findings indicate that many parents expressed their expectations through rational arguments, encouraging the participant to set achievable goals for themselves. Other parents exhibited a controlling style directing their children's decisions, mostly regarding their education, and setting strict family rules for them. However, even though these parents were using authority in such a way that they did not allow their children to feel free to make their own decisions and planning, they were still involved actively encouraging them to learn continuously. This outcome could have been different, if the data had contained more dimensions of parental authoritativeness than the one related to expectations (Gray/Steinberg 1999). Regarding this parental style, this study did not identify whether an authoritative or authoritarian style had a more dominant role in the development of SRL skills. However, this was an unexpected and counter-intuitive result suggesting how a parental style such as authoritarianism can benefit children in developing these skills.

The fourth sub-question was: "What are the common experiences, if any, regarding parents' attitudes towards learning?" The most recurrent common experience mentioned with regards to parental attitudes towards learning was parents repeatedly highlighting the importance of learning and education and actively facilitating the early literacy development of their children. This finding is in line with the research of Perry/VandeKamp (2000) which showed that children who are given opportunities to develop their literacy skills and select their own reading strategies are more likely to become capable of directing their own way of reading and their own literacy preferences. Previous research showed that children who are exposed to books and challenged to set their own reading performance goals at a young age have better chances of adopting self-regulated reading tactics and therefore developing higher SRL skills (Paris/Paris 2001). Although there is no literature that relates children's self-regulation

skills with parental attitudes towards learning, our findings suggest that parents who encourage their children to continuously learn and introduce them early to books and reading may positively affect children's ability to self-regulate their learning in the future. Based on these findings, we, therefore, propose the following hypothesis for future research:

> *H5. Parental attitudes towards learning contribute to the development of SRL skills.*

To take forward research on these hypotheses and themes explored in this study, we suggest two broad sets of approaches. First, these findings and hypotheses could be further refined and extended by using additional biographical interviews with larger samples from other countries and occupational groups. Such future biographical interview data sets can be combined with ours to see if these patterns could be replicated and whether other patterns and regularities may emerge. Such larger samples can be split by age, gender, country/region, occupation to see if these personal-demographic factors contribute to the differences and similarities observed. Importantly, such future exploratory biographical studies could include a control group (low self-regulated learners) comparing and contrasting the patterns among these with those identified among the highly self-regulated individuals.

Second, having a broader and refined scope of all the potentially relevant factors identified through exploratory research, future studies could progress to explanatory research, in particular, using correlational, longitudinal or laboratory-based designs. For instance, studies exploring interaction effects of different contexts (in- and out-of-school), as well as personal (personality, interest) factors may shed light on which factors are most prominent in shaping SRL skills and also allow us to explain why for example an authoritarian parental style may still result in high SRL.

6 Limitations

This study has some limitations which should be taken into consideration when interpreting the findings. First, this study examined the life histories of professionals in order to identify common experiences which contributed to their high levels of self-regulation. The study used retrospective, self-reported data and a form of qualitative analysis whereby emergent patterns are identified from the data. Such research designs can suffer from issues related to accuracy of recall, retrospective coherence, and researcher-bias in the interpretation of the data. This research design therefore provides only indicative patterns which should be explored through future correlational and/or longitudinal studies; it does not allow us to formulate any conclusions regarding the nature or the directionality of the links between the parental factors identified and the development of SRL skills. Additionally, only highly self-regulated individuals were studied; we did not collect interview data from the respondents who scored low on the self-regulated learning questionnaire, therefore, we cannot compare the patterns

across the different SRL groups. Furthermore, the sample was small and all the selected participants were knowledge workers in academia, business, government or international organisations. Thus, in order to be able to further generalise the results, a future study should involve a larger group of respondents from different sectors, educational backgrounds, countries and age groups. Finally, a key limitation is that not all participants mentioned all the parenting styles explored, either because they did not have explicit memory of these or because the questions about each specific parenting style were not asked directly (although all participants were probed and encouraged to discuss the parenting styles they experienced in their families).

Acknowledgements

We would like to thank Dr Manuela Bianco (formerly of Glasgow Caledonian University, UK) for conducting the interviews. We are very grateful to all the participants for their time and for sharing their personal histories.

Bibliography

Alexander, Christopher (1979): The timeless way of building, Oxford University Press: New York.

Baumrind, Diana (1966): Effects of Authoritative Parental Control on Child Behavior, in: Child Development 37:4, 887-907.

Beau, Adam / Carter, Kermit L. / Winsler, Adams (2009): The effects of maternal parenting style and religious commitment on self-regulation, academic achievement, and risk behavior among African-American parochial college students, in: Journal of adolescence 32: 2, 259-273.

Berliner, David C. (2009): Poverty and potential: Out-of-school factors and school success, in: The School of Education 1–52.

Boekaerts, Monique / Pintrich, Paul R. / Zeidner, Moshe (ed.) (2005): Handbook of Self-Regulation, Academic Press: San Diego.

Boekaerts, Monique / Corno, Lyn (2005): Self regulation in the classroom: A perspective on assessment and intervention, in: Applied Psychology 54: 2, 199–231.

Bornstein, Marc H. (2001): Parenting: Science and practice, in: Parenting 1: 1–2, 1–4.

Bouffard-Bouchard, Therese / Parent, Sophie / Larivee, Serge (1991): Influence of self-efficacy on self-regulation and performance among junior and senior high-school age students, in: International Journal of Behavioral Development 14: 2, 153–164.

Brubeck, Dan / Beer, John (1992): Depression, self-esteem, suicide ideation, death anxiety, and GPA in high school students of divorced and nondivorced parents, in: Psychological Reports 71: 3, 755-763.

Cheng, Helen / Furnham, Adrian (2004): Perceived parental rearing style, self-esteem and self-criticism as predictors of happiness, in: Journal of Happiness Studies 5, 1–21.

Chirkov, Valery I. / Ryan, Richard M. (2001): Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation, in: Journal of Cross-Cultural Psychology 32, 618–635.

Conrade, Glenys / Ho, Robert (1991): Differential Parenting Styles for Fathers and Mothers: Differential Treatment for Sons and Daughters, in: Australian Journal of Psychology 53, 29–35.

Cooper, Harris / Lindsay, James J. / Nye, Barbara (2000): Homework in the Home: How Student, Family, and Parenting-Style Differences Relate to the Homework Process, in: Contemporary Educational Psychology 25: 4, 464–487.

Creswell, John W. (2007): Qualitative Inquiry and Research Design: Choosing Among Five Approaches, Sage Publications: Thousand Oaks/London/New Delhi.

Darling, Nancy / Steinberg, Laurence (1993): Parenting style as context: An integrative model, in: Psychological Bulletin 113: 3, 487-496.

Deci, Edward L. / Ryan, Richard M. (1985): Intrinsic motivation and self-determination in human behavior, Kluwer Academic/Plenum Publishers: New York.

Dicicco-Bloom, Barbara / Crabtree, Benjamin F. (2006): The qualitative research

interview, in: Medical Education 40: 4, 314–321.
Effeney, Gerard / Carroll, Annemaree / Bahr, Nan (2013): Self-Regulated Learning : Key Strategies and their Sources in a Sample of Adolescent Males 1, in: Australian Journal of Education and Developmental Psychology 13, 58–74.
Fontana, Raymond P. / Milligan, Colin / Littlejohn, Alisson / Margaryan, Anoush (2015): Measuring self-regulated learning in the workplace, in: International Journal of Training and Development 19: 1, 32-52.
Gijbels, David / Raemdonck, Isabel / Vervecken, Dries (2010): Influencing Work-Related Learning: The Role of Job Characteristics and Self-Directed Learning Orientation in Part-Time Vocational Education, in: Vocations and Learning 3: 3, 239–255.
Gray, Marjory Roberts / Steinberg, Laurence (1999): Unpacking authoritative parenting: Reassessing a multidimensional construct, in: Journal of Marriage and Family 61: 3, 574–587.
Grolnick, Wendy S. (2009): The role of parents in facilitating autonomous self-regulation for education, in: Theory and Research in Education 7: 2, 164–173.
Grolnick, Wendy S. / Ryan, Richard M. (1989): Parent styles associated with children's self-regulation and competence in school, in: Journal of Educational Psychology 81: 2, 143–154.
Halle, Tamara / Forry, Nicole / Hair, Elizabeth / Perper, Kate / Wandner, Laura / Wessel, Julia / Vick, Jessica (2009): Disparities in early learning and development: lessons from the Early Childhood Longitudinal Study–Birth Cohort (ECLS-B), in: Child Trends, 1-7.
Heaven, Patrick / Ciarrochi, Joseph (2008): Parental styles, gender and the development of hope and self-esteem, in: European Journal of Personality 22: 8, 707–724.
Jossberger, Helen / Brand-Gruwel, Saskia / Boshuizen, Henny / van de Wiel, Margje (2010): The challenge of self-directed and self-regulated learning in vocational education: a theoretical analysis and synthesis of requirements, in: Journal of Vocational Education & Training 62: 4, 415–440.
Kanfer, Ruth / Chen Gilad / Pritchard Robert D. (ed.) (2008): Work motivation: Past, present and future, Routledge: New York/London.
Lambird, Kathleen Hoffman (2006): When do ego threats lead to self-regulation failure? Negative consequences of defensive high self-esteem, in: Personality and Social Psychology Bulletin 32: 9, 1177–1187.
Leech, Nancy / Onwuegbuzie, Anthony (2007): An array of qualitative data analysis tools: A call for data analysis triangulation, in: School Psychology Quarterly 22: 4, 557–584.
Lengua, Liliana J. / Sandler, Irwin N. / West, Stephen G. (1999): Emotionality and self-regulation, threat appraisal, and coping in children of divorce, in: Development and Psychopathology 11: 1, 15-37.
Littlejohn, Allison / Milligan, Colin / Fontana, Rosa Pia / Margaryan, Anoush (2016): Professional learning through everyday work: How finance professionals self-regulate their learning, in: Vocations and Learning 9: 2, 207-226.

Locke, Edwin A. / Latham, Gary P. (ed.) (2013): New developments in goal setting and task performance, Routledge: New York/London.

Loyens, Sofie M.M. / Magda, Joshua / Rikers, Remy M.J.P. (2008): Self-directed learning in problem-based learning and its relationships with self-regulated learning, in: Educational Psychology Review 20: 4, 411–427.

Lynch, Jacqueline / Anderson, Jim / Anderson, Ann / Shapiro, Jon (2006): Parents' Beliefs About Young Children's Literacy Development And Parents' Literacy Behaviors, in: Reading Psychology 27: 1, 1–20.

Margaryan, Anoush / Littlejohn Allison / Milligan Colin (2013): Self-regulated learning in the workplace: Strategies and factors in the attainment of learning goals, in: International Journal of Training and Development 17:4, 245–259.

Milevsky, Avidan / Schlechter, Melissa / Netter, Sarah / Keehn, Danielle (2007): Maternal and paternal parenting styles in adolescents: Associations with self-esteem, depression and life-satisfaction, in: Journal of Child and Family Studies 16: 1, 39–47.

Milligan, Colin / Littlejohn, Allison (2016): How health professionals regulate their learning in massive open online courses, in: The Internet and Higher Education 31, 113-121.

Milligan, Colin / Fontana, Rosa Pia / Littlejohn, Alisson / Margaryan, Anoush (2015): Self-regulated learning behaviour in the finance industry, in: Journal of Workplace Learning 27: 5, 387-402.

Nisbett, Richard E. / Wilson, Timothy D. (1977): Telling more than we can know: verbal reports on mental processes, in: Psychological Review 84: 3, 231–259.

Paris, Scott G. / Paris, Alison H. (2001): Classroom applications of research on self-regulated learning, in: Educational Psychologist 36: 2, 89–101.

Perry, Nancy E. / VandeKamp, Karen J.O. (2000): Creating classroom contexts that support young children's development of self-regulated learning, in: International Journal of Educational Research 33: 7–8, 821–843.

Pintrich, Paul R. (2000): The role of goal orientation in self-regulated learning, in: Boekaerts, Monique / Pintrich, Paul R. / Zeidner, Moshe (ed.): Handbook of Self-Regulation, Academic Press: San Diego: 451–502.

Pintrich, Paul R. (1999): The role of motivation in promoting and sustaining self-regulated learning, in: International Journal of Educational Research 31: 6, 459–470.

Purdie, Nola / Carroll, Annemaree / Roche, Lawrence (2004): Parenting and adolescent self-regulation, in: Journal of Adolescence 27:6, 663–676.

Ryan, Richard M. / Deci, Edward L. (2006): Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will?, in: Journal of Personality 74: 6, 1557-1586.

Ryan, Richard M. / Deci, Edward L. (2000): Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions, in: Contemporary Educational Psychology 25, 54–67.

Sitzmann, Traci / Ely, Katherine (2011): A meta-analysis of self-regulated learning in work-related training and educational attainment: What we know and where we

need to go, in: Psychological Bulletin 137: 3, 421-442.
Soenens, Bart / Vansteenkiste, Maarten (2005): Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support, in: Journal of Youth and Adolescence 34: 6, 589–604.
Smith, Cecil M. (ed.) (2009): Handbook of research on adult learning and development, Routledge: New York/London.
Spera, Christopher (2005): A review of the relationship among parenting practices, parenting styles, and adolescent school achievement, in: Educational Psychology Review 17: 2, 125–146.
Steinbach, Julia / Stoeger, Heidrun (2015): Measurement of optimal learning environments: validation of the parents' attitudes towards self-regulated learning scale, in: Psychological Test and Assessment Modeling 57: 2, 179–200.
Steinberg, Laurence (2001): We Know Some Things: Parent – Adolescent relationships in retrospect and prospect, in: Journal of Research in Adolescence 11: 1, 1–19.
Steinberg, Laurence / Darling, Nancy (1994): Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families, in: Child Development 65:3, 754-770.
Sui-Chu, Esther Ho / Willms, J. Douglas (1996): Effects of parental involvement on eighth-grade achievement, in: Sociology of Education 69: 2, 126–141.
Townsend, Corinne / Heit, Evan (2011): Judgements of learning and improvement, in: Memory and Cognition 39: 2, 204–216.
Vancouver, Jeffrey. B. / Day, David. V. (2005): Industrial and organisational research on self-regulation: from constructs to applications, in: Applied Psychology: An International Review 54, 155–85.
Wolters, Christopher A. / Yu, Shirley L. / Pintrich, Paul R. (1996): The relation between goal orientation and students' motivational beliefs and self-regulated learning, in: Learning and Individual Differences 8: 3, 211–238.
Wong, Maria M. (2008): Perceptions of Parental Involvement and Autonomy Support: Their Relations with Self-Regulation, Academic Performance , Substance Use and Resilience among Adolescents, in: North American Journal of Psychology 10: 3, 497–518.
Zimmerman, Barry (2006): Development and adaptation of expertise: The role of self-regulatory processes and beliefs, in: Ericsson, Anders K. / Charness, Neil / Feltovich, Paul J. / Hoffman, Robert R. (ed.): The Cambridge Handbook of Expertise and Expert Performance, Cambridge University Press: New York: 705–722.
Zimmerman, Barry J. (2000): Attaining self-regulation: A social cognitive perspective, in: Boekaerts, Monique. / Pintrich, Paul R. / Zeidner, Mosche (ed.): Handbook of self-regulation, Academic Press: San Diego: 13–39.
Zimmerman, Barry J. (2002): Becoming a Self-Regulated Learner: An Overview, in: Theory Into Practice 41: 2, 64–70.
Zimmerman, Barry J. (2000): Self-efficacy: An essential motive to learn, in: Contemporary Educational Psychology 25:1, 82-91.
Zimmerman, Barry J. (1990): Self-Regulated Learning and Academic Achievement:

An Overview, in: Educational Psychologist 25: 1, 3–17.
Zuckerman, Harriet (1977): Scientific Elite: Nobel Laureates in the United States, The Free Press: New York.

Appendix 1. Self-regulated learning questionnaire

Self-Regulated Learning at Work (SRLW) Questionnaire

Page 1: PERSONAL DETAILS

Welcome to the Self-Regulated Learning at Work (SRLW) questionnaire.

This questionnaire covers the learning activities you may be involved in, the actions you may perform to self-regulate your learning and the type of tasks you carry out at work. The questionnaire will take about 15 minutes to complete.

1. Your name

2. Year of birth

3. Your organisation

4. Your primary job role

5. Country you are based in

Page 2: WORKPLACE LEARNING ACTIVITY

Knowledge workers learn continually as they work, though they may not always be aware that they are learning. This section presents some possible learning activities you may have experienced during your work.

6. How frequently have you participated in the following learning activities **in the last year**?*

***This question is required.

	1= never	*2= a few times*	*3= At least once every month*	*4 = At least once a week*
5.1 Acquiring new information (e.g. by searching the internet or company knowledge base)*				
5.2 Working alone or with others to develop solutions to problems*				
5.3 Working alone or with others to develop new ideas*				
5.4 Following new developments in your field*				
5.5 Performing new tasks*				
5.6 Asking colleagues for advice *				
5.7 Attending a training course *				
5.8 Using self-study materials*				
5.9 Observing or replicating colleagues' strategies to complete a task or solve a problem*				
5.10 Finding better way to do a task by trial and error*				
5.11 Reflecting on previous actions*				
5.12 Receiving feedback on tasks from work colleagues*				

Page 3. SELF-REGULATED LEARNING

Knowledge workers may regulate their learning in different ways. This section provides possible actions you may have carried out while performing a work task and/or during learning activities at work.

7. To what extent do the following statements describe your behaviour?* Please indicate how you typically behave, rather than how you think you should behave.

*This question is required

	1 = not at all true	*2 =some-times true*	*3 = true most of the time*	*4 = al-ways true*
6.1 I set personal standards for per-formance in my job*				
6.2 I set goals (monthly or yearly) for myself in order to direct my learning activities*				
6.3 I set realistic deadlines for learn-ing when I have identified a learning need*				
6.4 I ask myself questions about each learning task before I begin*				
6.5 I think of several ways to solve a problem and choose the best one*				
6.6 When planning my learning, I adapt strategies that have worked in the past*				
6.7 I use specific strategies for dif-ferent types of things I need to learn*				
6.8 I think I will be able to use what I learn in this job in the future*				
6.9 It is important for me to learn new things in this job*				

Page 4. SELF-REGULATED LEARNING (2)

8. To what extent do the following statements describe your behaviour?* (continued)

*This question is required.

	1 = not at all true	*2 =some-times true*	*3 = true most of the time*	*4 = al-ways true*
7.1 Learning that I undertake in this job is important to me*				
7.2 I can remain calm when facing difficulties in my job because I can rely on my abilities*				
7.3 When I am confronted with a problem in my job, I can usually find several solutions*				
7.4 Whatever comes my way in my job, I can usually handle it*				
7.5 My past experiences in my job have prepared me well for my profes-sional future*				
7.6 I meet the goals that I set for my-self in my job*				
7.7 I feel prepared for most of the demands in my job*				
7.8 I write down a plan to describe how I will achieve my learning goals*				
7.9 I ask myself how what I'm learn-ing is related to what I already know*				
7.10 I change strategies when I don't make progress while learning*				
7.11 When learning I make notes or diagrams to help organise my thoughts*				

Page 5. SELF-REGULATED LEARNING (3)

9. To what extent do the following statements describe your behaviour?* (continued)

*This question is required.

	1 = not at all true	*2 =some-times true*	*3 = true most of the time*	*4 = al-ways true*
8.1 I focus on the meaning and significance of new information*				
8.2 I organise my time to best accomplish my goals*				
8.3 When I'm learning, I try to relate new knowledge I find to what I already know*				
8.4 When I'm learning, I bring together information from different sources (for example: people and resources)*				
8.5 I try to apply ideas from my previous experience to my job where appropriate*				
8.6 During learning I treat the resources I find as a starting point and try to develop my own ideas from them*				
8.7 I try to play around with ideas of my own related to what I am learning*				
8.8 In my job I think about possible alternative ways to do my tasks*				
8.9 When I can't understand a task, I ask my colleagues or others for help*				
8.10 I try to identify colleagues in my workplace whom I can ask for help if I need it*				

Page 6. SELF-REGULATED LEARNING (4)

10. To what extent do the following statements describe your behaviour?* (continued)

*This question is required.

	1 = not at all true	*2 =sometimes true*	*3 = true most of the time*	*4 = always true*
9.1 When I am unsure about something I look it up*				
9.2 I fill in the gaps in my knowledge by getting hold of the appropriate material*				
9.3 When faced with a challenge in my job I try to understand the problem as thoroughly as possible*				
9.4 I like opportunities to engage in tasks that require me to learn*				
9.5 I prefer tasks that arouse my curiosity, even if I need to learn a lot to achieve them*				
9.6 I know how well I have learned once I have finished a task*				
9.7 I ask myself if there were other ways to do things after I finish a task*				
9.8 I think about what I've learned after I finish*				
9.9 I think about how what I've learned fits in to the 'bigger picture' at my organisation*				
9.10 I consider how what I've learned relates to my team/group*				
9.11 I try to understand how new information I've learned impacts my work*				

Page 7. FOLLOW-UP

10. We might contact you again for a follow-up interview. Would you be willing to participate*?

    *This question is required.

    YES ☐
    NO ☐

11. What is your email?

    ☐

Page 9. THANK YOU PAGE

Thank you for taking our survey. Your responses to the questionnaire will allow us to get to know more about the type of work you do and what type of self-regulated learner you are.

If you have agreed to participate in the follow-up study, we may contact you again for an interview. If this is the case, we will send you an invitation explaining what's involved soon.

Appendix 2. Semi-structured biographical interview questions

1. Introductions

- Interviewer introduces herself (position/institution)
- Interviewer introduces the project (what are we investigating/why is it important/relevant to investigate it)
- Interviewer outlines some more details: *we are looking for regularities in the life histories of highly-self regulated individuals such as yourself. We expect this will shed some light on what makes individuals self-regulated learners.*
- Interviewer now gives the word to the respondent: *we are interested in the environment you grew up in, your family, your friends, your education, your interests from the more distant to the more recent past – Could you tell me about this?*

2. Factors to explore during the interview

Environment/context

- Family (composition/occupation of family members/socioeconomic status; for siblings: birth order)
- Close (childhood/youth) friends (occupation/socioeconomic status; group small/large/loner)
- Parents (parental control: overprotective or encouraging freedom/exploration/independence; attitudes to learning: encouraging learning for own sake/valuing independent learning)
- Educational experiences related to choice of vocation including educational history (kindergarten, school –incl. type, HE, self-pursued learning in relation to vocation)
- Liked to read as a child; age when they learned to read
- Hobbies/interests (incl. self-pursued learning in relation to interests/hobbies)
- Access to knowledge
- Situations of need and 'lack' that may have motivated them to learn

Personal factors

- Religion
- Conceptual thinker; systematic vs. non-systematic thinking practices; mode of thinking (visual/conceptual-analytic/social)
- Aspirations; existence of role models; visualising possible-self (desired possible-self, feared possible-self); who are the role models- adult or peer, real or literary character; nature of association: knows personally or observes at a distance; at specific moments in life or throughout; intentionally self-sought or just those available in the current environment; role of technology in these vicarious processes – e.g. Observing someone through their blog, delicious or twitter
- Work ethic
- Sociable vs. loner
- Finding things out for oneself vs. dependent on authority (parents/school/church/other institutions)
- Regulating and adapting the context rather than just oneself
- Persistence
- Emotion control
- Selective attention/ability to inhibit distractions/"planfulness" (=full of resources and plans or acting according to a plan?)
- Other construct questions around personal/psychological characteristics?

Examples of SRL activities and behaviours

- Planning (including all sub-processes)
    - Goal setting (outcome or process goals; performance or mastery goals[goal orientation]; hierarchy of goals)

    - Should goal commitment, specificity of goals (quantifiable in terms of number of strategies; frequency of behaviour; or desired outcomes) and difficulty of goals also be here? Also proximal and distal goals, duration and intensity of goals, goals assigned by authority figures or self-set? Under what conditions assigned and under what conditions self-set?
    - Also discrepancies between current and desired state should be here?
- Performing (including all sub-processes)
    - Feedback seeking/feedback acceptance
- Reflection (including all sub-processes)
    - Goal revision (changing or disengaging from goals)
    - Self-reactions (self-satisfaction, self-reward strategies)
- Workplace factors
    - Simultaneous pursuit of multiple goals
    - Team processes
    - Multi-person processes
    - Access to knowledge and expertise
    - Multiple tasks
- Current discretion at their work (are they free to set their own problems or do others tell them what to work on/think about)

3. Examples of prompts and probes to use in the interview

Prompts (**Environment/context** – for a full list of factors/constructs/concepts see below)

- You mentioned X, Y… What about? Can you tell me about Z too?

Probes

- For more detail: When did that happen? Who else was involved? Where were you during that time? What was your involvement during that situation? How did that come about? Where did it happen? What would that look like? How do you do that? What were other people doing then? How did others respond to that? If I were watching you doing this, what would I see?
- For elaboration: Could you say some more about that? Can you tell me more about that? Would you elaborate on that? That's helpful. I'd appreciate if you could give me more detail. Can you give me an example?
- For clarification: You said X… What do you mean by X? What you are saying is very important, and I want to make sure I get it down exactly the way you mean it: please explain some more. When you say Y, what are you actually thinking/doing? It sounds like you are saying Z. Is that a fair summary? So you are saying Z?
- To get their feelings, thoughts, and rationales: How did you feel about that? Why was that important to you? Why does that matter? Why does that stand

out in your memory? Why do you think you noticed that? What was significant about this to you?
- To ask about variations: Do you always do this in this way? What might make you do this differently? Have you always felt this way? How has your approach changed over time? What motivated this change?
- To test their ideas (using an opposite situation): Last week a respondent said s/he thought that… What do you think about that? I recently read about X doing Y… What do you feel about that? Suppose X… What would you think/do?
- To review all possible factors: What about X? Is Y important to you?

Prompts for personal/psychological factors

- You have now told me in great detail about the environment you grew up in. You also mentioned a lot about yourself, for example… Could you tell me more about this?
- use probes above, but have specific prompts about each person's personal/psychological factors, constructs and concepts ready – this should be updated for each respondent after having studied the biographical material

Prompts for self-regulated learning

- We have already talked about self-regulated learning. You mentioned X, Y… Can we now focus more specifically on this?

Wrap-up

- Thank the respondent for participation
- Explain what will happen next (we'll send them the transcript to check, and provide a summary of their responses if they'd like to have one)

Authors

Evangelia Tiniakou
University of Twente, the Netherlands
Drienerlolaan 5
7522 NB Enschede
evang.tin@gmail.com

Tim Hirschler
University of Twente, the Netherlands

Drienerlolaan 5
7522 NB Enschede
tim@hirschler.nl

Maaike Endedijk
University of Twente, the Netherlands
Drienerlolaan 5
7522 NB Enschede
m.d.endedijk@utwente.nl

Anoush Margaryan
University of West London, UK
St Mary's Road
W5 5RF London
anoush.margaryan@gmail.com