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**Author(s):** Parada, Filomena; Salmela-Aro, Katariina

**Title:** Real-Time Processes of Career Goal Construction : A Study Case Approach with Implications for the Development of Adolescents' Identity

**Year:** 2022

**Version:** Published version

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**Please cite the original version:**

Parada, F., & Salmela-Aro, K. (2022). Real-Time Processes of Career Goal Construction : A Study Case Approach with Implications for the Development of Adolescents' Identity. *Identity*, 22(1), 82-100. <https://doi.org/10.1080/15283488.2022.2030233>



# Identity

An International Journal of Theory and Research

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/hidn20>

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To cite this article: Filomena Parada & Katariina Salmela-Aro (2022): Real-Time Processes of Career Goal Construction: A Study Case Approach with Implications for the Development of Adolescents' Identity, *Identity*, DOI: [10.1080/15283488.2022.2030233](https://doi.org/10.1080/15283488.2022.2030233)

To link to this article: <https://doi.org/10.1080/15283488.2022.2030233>



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# Real-Time Processes of Career Goal Construction: A Study Case Approach with Implications for the Development of Adolescents' Identity

Filomena Parada <sup>a,b</sup> and Katariina Salmela-Aro <sup>a</sup>

<sup>a</sup>Department of Education, Faculty of Educational Sciences, University of Helsinki, Helsinki Finland; <sup>b</sup>Department of Psychology, Faculty of Education and Psychology, University of Jyväskylä, Jyväskylä Finland

## ABSTRACT

The study aimed at investigating how different young people going through the post-high school transition set, monitor, pursue, and renegotiate career goals in real-time and in everyday life circumstances. A theoretically driven proposition supported the conceptualization of career goals as complex dynamic systems and guided the examination and description of the moment-to-moment processes shaping the (re)construction of career goals. The study adopted an exploratory research approach and was based on a longitudinal case study design. Diary reports were collected for 39 weeks. Participants were four young people (three females, one male) who at the onset of the study were 18 years of age and attended their last year of high school. A ground-up analysis of the data was conducted, which culminated in a comprehensive narrative describing and interpreting the properties and behavior of the participants' career goal system. Results showed that despite some similarities in how the career goal system of each participant reacted to challenging events, these systems operated in a highly idiosyncratic manner. Differences in the real-time properties and behavior of the career goal systems provided insights into the mechanisms driving macroscopic processes of career goal construction and highlighted their relevance for young people's identity formation.

## KEYWORDS

Career goals; real-time processes; identity construction; young people; post-high school transition

To determine what is fundamentally important and make sense of what gives meaning to life is a key challenge individuals face, especially during adolescence and young adult years (Guichard et al., 2012). Young people cope with many transitions and decisions requiring them to continuously (re)construct their sense of personal identity, thus, to actively organize themselves and take position on who they are, on what they would (not) like to be or become, as well as on what they might be likely or capable of becoming (Freund & Baltes, 2000). Goals play a key role in this process (Lerner et al., 2001). It is through the construction of goals and of goal sequences that young people give structure, coherence and a direction to their lives and careers (Domene et al., 2015). Goals are internal representations of end states that people desire to attain, maintain, or avoid (Austin & Vancouver, 1996). They specify something the person wants to strive for, achieve or avoid, "not something already attained" (Moskowitz, 2011, p. 12). Therefore, processes of goal construction and of identity formation are closely intertwined and at the heart of how young people navigate the multiple career transitions they are faced with during their youth years (Dietrich et al., 2012). One example of such transitions is the post-high school transition.

**CONTACT** Filomena Parada  [filomena.parada@helsinki.fi](mailto:filomena.parada@helsinki.fi)  Faculty of Educational Sciences, University of Helsinki, PO Box 9, Minerva, Siltavuorenpenger 5A, FI-00014, Finland

 Supplemental data for this article can be accessed on the [publisher's website](#).

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While navigating the post-high school transition, young people must intentionally engage in behavior allowing them to choose and act on their decision to continue studying, either in higher education or in some other form of education or training at the secondary level, to take a gap year, or to enter full-time employment (Dietrich et al., 2012). Positive transition outcomes, like securing a position in higher education or in the labor market, are more likely when the young person sets and pursues transition-related goals and strategies in a manner that is timely and that meets the specific demands of their situation (Salmela-Aro, 2009). However, goal setting or pursuit may sometimes be obfuscated or uncertain. It may also be hampered by a substantial loss of control or a major crisis. Under these circumstances, the individual differences in young people's regulatory capacities are heightened and differences in outcomes will become more salient (Heckhausen & Wrosch, 2016). The young person may end up not being able to obtain a higher education degree or to secure a job.

## Conceptualizing Career Goals as Complex Dynamic Systems

The conceptualization of career goals as a complex dynamic system allows to apply the core features or laws governing such systems to how career goals change, fluctuate or remain the same in reaction to real-time, everyday events occurring during a transition (Kunnen, 2012). Among the theory's central principles is the notion that developmental processes are non-linear, self-organizing, and highly idiosyncratic (Van Geert, 2019). Non-linearity is the product of iterativity and is closely intertwined with self-organization (Van Geert & Van Dijk, 2015). It is through iterativity that stable patterns of organization or attractor states emerge. These states indicate a higher-order system where interactions among its components and their networks are organized and consolidated (Kunnen, 2012). The highly individualized or idiosyncratic nature of developmental processes results from the ways in which the system varies or fluctuates, which are specific to the dynamics of the moment-to-moment transactions the person and the context maintain with one another (Van Geert & Van Dijk, 2015). Nonetheless, certain kinds of coherent or systematic patterns of change across and within individuals exist and can be observed both at the micro- and at the macro-level (Nesselroade & Ram, 2004).

Transitions are key developmental periods that challenge the stability of the system's internal structure and flexibility, thus putting the strength of its regulatory mechanism to the test (Kunnen, 2012). During a transition, variability increases, which offers the system an opportunity either to change or to reinforce its regulatory or adaptive strategies (Van Geert & Van Dijk, 2015). Variability – defined as the amount of fluctuation a system experiences over time – co-occurs with and drives growth and change (Van Geert, 2019). This indicates that the system is going through a period where structural reorganizations of its components and their networks are being tried out. Variability provides valuable information for understanding how, when, and why individuals change (Nesselroade & Ram, 2004). The more reluctant a system is to change, the higher is its inertia and the stronger is the regulatory mechanism pushing the system toward the original attractor state, that is, toward preservation (Hamaker, 2012). A system is pushed toward adaptation when a weaker regulatory mechanism makes it more prone to perturbation and to a slower recovery of stability.

### The Career Goal System

The literature focusing on goals and on goal processes has not yet addressed (career) goals as dynamic systems specifically. However, the literature systematically refers to several properties of the goal that can be used for deciding which components to include in this conceptualization, specifically the content of the goal, its meaningfulness, and the dimensions according to which goals are appraised. First, the content of the goal, which consists of a description of the outcomes the young person desires to attain or avoid (Moskowitz, 2011). Examples are “to pass in the exams” or “not to stress because of work.” However, the goal content *per se* does not allow to apprehend its meaningfulness (Domene et al., 2015). The second component of the goal system is goal meaningfulness. To capture the meaning of the goal, it is necessary to understand what the goal underlying the young person's action is about.

According to Domene et al. (2015), this information can be found in the young person's explanations of the purpose of the goal. The young person may have set the goal of passing in the exams because of their desire of either being admitted to university or of avoiding retaking the exams.

Success in goal pursuit increases when the goal is represented both at the low or subordinate (content) level and at the higher or superordinate (meaningfulness) level, as well as when it is framed as an approach goal instead of an avoidance goal (Freund & Baltes, 2000). Success in goal pursuit often results in the termination or replacement of the goal (Moskowitz, 2011). The third component of the system is goal appraisals, or how young people think and feel about their goals. Goal appraisals play an important role in how youth determine success in goal pursuit; thus, in how they steer, control and regulate (dis)engagement with the goal (Salmela-Aro, 2009). Goal appraisals are highly contextual and reflect the young person's evaluation of six specific dimensions highlighting how the system is being mobilized toward goal achievement (for a review, see, Austin & Vancouver, 1996). The six goal appraisal dimensions commonly referred to in the literature are goal commitment, confidence, effort, difficulty, stress, and progress.

The first dimension is commitment to the goal, which is the extent to which goal attainment is important to youth and the degree to which they are determined to achieve the goal (Latham & Locke, 2013). As Latham and Locke noted, the degree to which young people feel confident about goal achievement influences their commitment to the goal. Goal confidence is the second dimension relevant for understanding how goals are appraised. Goal complexity can be inferred from youth's evaluation of the effort required by goal achievement, particularly from their assessment and decisions about the amount of time and the degree of difficulty entailed by goal attainment (Salmela-Aro, 2001). Goal effort and goal difficulty are the third and fourth dimensional that are key for understanding how goals are appraised. Typically, effort is mobilized and expended proportionally to one's assessment of the level of difficulty attached to goal achievement (Latham & Locke, 2013). This relation is contingent on the feedback received by the system about the discrepancy that exists between the young person's current and desired end state (Moskowitz, 2011). Therefore, difficulty can both enhance performance and be a source of strain for the system, especially when attached to the feeling of having to perform effectively (Freund & Baltes, 2000).

The fifth goal appraisal dimension is goal strain or stress. Goal stress is commonly attached to strong negative emotions that are likely to negatively influence one's assessment of career goal feasibility and that, ultimately, may lead to goal disengagement (Heckhausen & Wrosch, 2016). The feedback the system receives regarding the state of the goal plays a fundamental role in the assessment of success expectancy about goal achievement, specifically for determining what in the system needs to be turned on, off or adjusted (Moskowitz, 2011). According to Moskowitz, one way of accessing such an information is to measure progress toward the goal, particularly, how far one has come toward achieving the goal. Goal progress is the sixth dimension relevant for understanding how goals are appraised. However, the assessment of progress toward the goal may not always be simple, as a disconnect between effort and progress often occurs in everyday life circumstances.

### ***Goals and Identity Formation in the Career Domain during the Youth Years***

Identity formation is a dynamic, multidimensional, and often asynchronous process that is linked to the salience different domains have at specific moments of young people's lives (Skorikov & Vondracek, 2011). Vocational identity is not only positively associated with general identity but is a central, integrative domain of the overall process of identity formation (Porfeli et al., 2011). During the youth years, the development of identity in the career domain appears to precede the development of identity in other life domains (Skorikov & Vondracek, 2011). It provides young people with a sense of meaning, and it operates as a framework for regulating the setting and pursuit of goals attached to the making and implementation of career choices and of plans for the future (Lerner et al., 2001).

Young people's sense of vocational identity is formed and career goals are (re)constructed as the young person explores, commits to, and reconsiders career options (Porfeli & Lee, 2012). These three components of the identity formation process combine elements from different modern identity

development models (Crocetti et al., 2008; Luyckx et al., 2008), and account for the patterns or identity statuses shaping the development of young people's (vocational) identity (Porfeli et al., 2011). Career exploration can be either in-breadth or in-depth (Porfeli & Lee, 2012). In-breadth exploration is directed toward the exploration of alternatives and facilitates greater flexibility in the making of career choices. When prolonged and not complemented by deep exploration, it may lead to a lack of career planning and confidence. Conversely, in-depth exploration helps reinforce the strength of existing commitments. It has been positively associated with increases in career planning and confidence, a decrease in career choice doubt, and stronger commitments in the career domain.

Career commitment involves making a choice and committing to that choice (Porfeli et al., 2011). The timing for committing to a career choice is highly idiosyncratic as it depends on the young person coming to a decision, and then attaching themselves to – or identifying with – that choice or commitment (Porfeli & Lee, 2012). Career reconsideration concerns the reexamining of one's current commitments and the comparison between available alternatives to further specify career choices and plans (Porfeli et al., 2011). According to Porfeli et al., career reconsideration includes two dimensions: career self-doubt and commitment flexibility. Career self-doubt refers to feelings of anxiety and uncertainty about one's current and future career options, which may hinder in-depth exploration and the process of commitment-making. Commitment flexibility consists of the acknowledgment of and openness to the possibility of change in existing career commitments. Commitment flexibility may be adaptive in that it allows young people to remain uncommitted and open to the exploration of alternatives (Porfeli & Lee, 2012).

Recently, Van der Gaag et al. (2020) conceptualized identity as a landscape composed of valleys that represent the constellation of the young person's commitments. The deeper the valley, the stronger the commitment and the more the young person is pulled – or attracted – toward the commitment and the less they are willing to change it (Bosma & Kunnen, 2001). Over time, commitment valleys “emerge, broaden, and disappear” (Van der Gaag et al., 2020, p. 277). The extension and complexity of a young person's dynamic identity landscape partly depends on the variety and richness of the experiences they had access to in the environments they grew up in. According to Van der Gaag et al., the more the young person's life experiences are integrated into a coherent whole, the wider are the identity commitment valleys and the less disruptive will the impact of their day-to-day experiences be, within and across domains. Emergence or change in the structures constraining the young person's identity landscape occurs when experiences deviating from existing identity commitments originate conflict leading to their accommodation, that is, to a change in commitment(s). The structure of the identity landscape will remain unchanged if divergent experiences are ignored or assimilated by the young person (Bosma & Kunnen, 2001). As Bosma and Kunnen noted, the assimilation of a conflicting experience will make the young person change their perception of the disrupting event instead of changing the commitment.

### **The Finnish Context**

In Finland – where the study was conducted, about 80% of new upper secondary education graduates apply to higher education (Karhu, 2018). However, yearly, approximately 67% of the candidates for higher education are rejected and only about 25% immediately proceed with their studies at the tertiary level (Organization for Economic Co-Operation and Development [OECD], 2019). Delays at the start of higher education and the need to reapply make many young Finns take one or more involuntary gap years or do military service after graduating from upper secondary education (Salmela-Aro et al., 2016). As a result, Finnish youth tend to enter tertiary education about two years later than their OECD counterparts, when they are around 24 years of age (Salmela-Aro, 2020).

Criteria for selecting applicants to higher education are highly selective and heavily based on the young person's results in the matriculation examinations taken at the end of high school, and in university-based entrance exams (Karhu, 2018). A series of educational reforms were and continue to be implemented with the aim of enabling the transition from upper secondary to tertiary education and of speeding up the placement of first-time applicants (OECD, 2019). However, it is not clear if

these reforms will contribute to mitigate the pressure the current performance-based culture exerts on young people preparing for and going through the post-high school transition (Salmela-Aro, 2020). As Salmela-Aro noted, recent studies have shown worrying signs that Finnish youth not only are experiencing increased stress levels and decreased wellbeing, but also feel they must push themselves to perform even when the cost in terms of emotional exhaustion is high.

Salary and the extensive financial support provided by the government are other key components of young Finns' (lengthy) transitions (Salmela-Aro et al., 2016). Employment is permitted and sought regularly from the age of 16. Nevertheless, Finland needs to smooth the school-to-work transition of its youth and improve their labor market outcomes, which were worsened by the COVID-19 pandemic. Finland is one of the OECD countries with the highest youth unemployment rates, and only one in three young Finns aged 15 to 29 are exclusively in employment (OECD, 2019). About one-third of the employed youth work part-time and, of these, more than two-thirds combine studying and working. The high number of youth combining studies with work – 19.6% (the OECD average is 13.1%) – partly explains the country's high rates of youth unemployment (OECD, 2019). However, it does not necessarily account for the relatively high percentage of youth holding temporary jobs – about 44% against an OECD average of 25% –, and that would like to stop working part-time if they were able to find a full-time job – 24% against an OECD average of 14%.

## Study Aim and Approach to Research

The aim of the present study is to investigate, from an intra-individual perspective, how during the post-high school transition young people set, monitor, pursue, and renegotiate career goals in real-time and in everyday life circumstances. The following research question is addressed: How do different young people going through the post-high school transition initiate, maintain, terminate, or revise career goals in real-time and in everyday life circumstances? To date and similarly to other developmental phenomena, processes of goal (dis)engagement have mostly been studied across long time intervals, like several months or years. These processes have been less studied at the micro-level; thus, not according to how they flow in daily life and across shorter time spans like hours or days (Lichtwarck-Aschoff et al., 2008). Hence, there is a need for dynamic approaches to research like the one used in the present study, describing how the career goal system evolves over time and allowing to identify the mechanisms driving change in individual career goal systems.

The scarcity of the literature on this topic explains the adoption of an exploratory research approach relying on a longitudinal case study design (Stebbins, 2001). It also underlies the decision to guide the conceptualization, examination, and description of the real-time processes through which youth (re)construct career goals by a theoretically driven proposition (Yin, 2018).

**Proposition.** A career goal is a system made of several interacting components organized into networks whose dynamics determine how career goals behave over time. These dynamics are expected to vary over time, within and across individuals, in ways that are highly unique and indicative of different within-person regulatory mechanisms. Their investigation will allow to gain insights into the processes by which youth set, monitor, pursue and renegotiate career goals while navigating a major career transition like the post-high school transition.

## Materials and Method<sup>1</sup>

### Participants

The four participants included in the present study, one male and three females, were 18 years of age at the start of the study, attended the last year of secondary education in schools located in the Metropolitan area of Helsinki, and consented to study participation. The study followed the general

ethical guidelines of scientific studies set by the Finnish Advisory Board of Research Integrity (TENK) and followed the recommendations of the ethics committees of the universities where it was conducted, which only require that the principle of informed consent is applied with participants aged 16 years or over.

The full data set included 58 participants. The four cases in the present study were selected among a pool of 13 young persons whose compliance to study participation met the criteria of a time series with a minimum of 25 observations, and with responses that were distributed across the full length of the data collection (Jebb et al., 2015). Additional selection criteria included an analysis of answers to the questions focusing on the weekly (subordinate) career goal, and on the explanation about the importance of the goal (“why is this goal important to you?”; superordinate career goal). This analysis explored the presence of patterns in the structure of sequences of the weekly answers given to these two questions and cross-referred any observable patterns with the timing and the frequency of the career goal changes reported by the participant. It was assumed that different timings and frequencies of career goal change would indicate systems reacting differently to real-time events challenging their self-organization and patterns of behavior (Van Geert, 2019). A similar assumption was made regarding differences in the structure of the sequences of the themes identified in participants’ answers to the questions focusing on their sub- and superordinate career goal.

The selection procedure resulted in the organization of these 13 participants into three groups. The first group included three participants whose career goal system appeared to be more stable. These participants reported up to 2 career goal changes (range 0–2). No major differences were apparent in how the sequences of their answers to the open-ended questions fluctuated. Because her superordinate career goals were identified in many participants in the full data set and illustrated a key aspiration of young Finns – entering university, Lotta was chosen as the case to be included in the present study. In the second group were the two participants whose career goal system appeared to be more reactive or unstable. These participants reported over 13 career goal changes (range 14–17). No major differences were apparent in how the sequences of their answers to the open-ended questions fluctuated. Henrik as chosen as the case to be included in the present study. The third group included eight participants whose career goal system appeared to be neither highly stable nor highly reactive, and whose behavior suggested a pattern of interaction among its components that was neither relatively consolidated nor relatively disorganized. These participants reported changing their career goal from 3 to 13 times (range 3–9). Differences in how the sequences of participants’ answers to the open-ended questions fluctuated, and/or the timing of their answers resulted in the decision to select two cases, Hannaliisa and Maari.

The four participants selected for the present study were among the most expressive and among those that showed the highest number of responses to the weekly questionnaire. Pseudonyms are used for the participants in the selected cases.

## **Design**

The study used a longitudinal case study design that relied on weekly diary reports to capture participants’ circumstances and contemporaneous experiences regarding a self-set career goal (Yin, 2018). For 39 weeks, at a fixed schedule (same weekday and same time of the day), participants received a notification in their personal mobile phones informing them it was time to fill in the questionnaire. A reminder was sent halfway through the period set for collecting the data at each measurement. Data collection started at the end of March 2019, on the last day of the spring matriculation examinations, and ended in mid-to-late December 2019. Table S1 in the online supplementary materials provides an overview of the events study participants went through during the period covered by the data collection. Rewards were given to participants based on compliance with study participation.

### **Platform for Collecting the Data**

Data collection used AWARE (Ferreira & Kostakos, 2021). AWARE is an instrumentation framework that is open source and freely available for academia and industry. AWARE does not collect any personal identifiers and data, and it randomly generates a Unique User ID for each participant. Study-related information that was stored by default in the participants' mobile phones was integrated with an AWARE Server. AWARE offers data encryption and obfuscation by default, which allowed the safe replication of the data to the secure remote database (Ferreira et al., 2015). In the server, a dashboard was created that plotted participants compliance to study requirements and that allowed researchers to access the data collected.

### **Measure**

Participants' weekly reports were collected using Bridging the Gaps (Parada et al., 2019). The items used in the present study included a multiple response question asking participants to choose the alternatives describing their current situation. Examples are studying full or part-time, or working full or part-time. They also included the open-ended questions asking participants: (a) to report their current main education and/or work-related goal (subordinate career goal; focus on the content of the goal), (b) to state why the goal was important to them (superordinate career goal; focus on the meaningfulness of the goal), and (c) to indicate if the goal had changed during the past week – yes or no response – and, if the goal had changed, to specify what had made the goal change.

Finally, in the present study were included the six items asking participants to appraise their career goal and to rate their career goal appraisals from 1 (not at all) to 100 (very) in a slide bar. The goal appraisal items asked participants: (a) how committed they were to the career goal they reported (career goal commitment), (b) how confident they felt about achieving the goal (career goal confidence), (c) how difficult achieving the goal would be (career goal difficulty), (d) how much effort they had put into achieving the goal (career goal effort), (e) how close they felt being to goal achievement (career goal progress), and (f) how stressful they felt the career goal to be (career goal stress).

### **Analysis Strategy**

To identify the intra-individual, micro-level variations in the processes through which young people go through the post-high school transition (re)construct career goals in everyday life circumstances, an exploratory research approach combining qualitative and quantitative data was adopted (Stebbins, 2001). Data were explored using a ground up process similar to data mining and unfolded according to three steps. First, to identify some preliminary patterns susceptible to a meaningful interpretation, a qualitative content analysis of participants' answers to the open-ended questions was conducted (Schreier, 2012). A similar procedure was implemented for the analysis of participants' answers to the multiple response question focusing on their current situation in education or employment. See section on Additional Information on Materials and Method, and Tables S2 to S4 in the online supplementary for additional information on the categories used to capture participants' situation in education and employment, and describing the key domains and associated core themes identified in participants' answers to the open-ended questions.

Next, an Autoregressive Integrated Moving Average (ARIMA) model for each goal appraisal dimension – commitment, confidence, difficulty, effort, progress, and stress – for each case individually was computed to uncover the structure of the variability of each time series (Hamaker, 2012). The computation of these models was complemented with the analysis of the visual representation of the sequence of raw scores in the time series of each appraisal dimension for each participant separately (Jebb et al., 2015). Following a within-person analysis of the bivariate associations, the dimensions of the career goal appraisals established with one another over time. The bivariate associations allowed to

understand how each individual system was organized and the extent to which relations between its components were consolidated. For each individual case, Spearman correlations combining all possible pairs of the dimensions of the career goal appraisals were computed.

Finally, to integrate the data, findings from the qualitative analyses were integrated with the results from the quantitative analyses (Waller et al., 2021). From this integration resulted a nuanced and comprehensive narrative description of the dynamic properties and behavior of each participant's career goal system throughout the study.

## Results<sup>2</sup>

### Lotta

Lotta reported a single career goal change (week 28), which was motivated by a change in circumstances: The fall matriculation examinations ended that week, and Lotta was now waiting for the start of the spring 2020 matriculation examinations. Lotta's subordinate career goals were to make through the matriculation examinations and graduate from high school and to study/get good grades. The themes identified in Lotta's answers to the question focusing on her superordinate career goals concerned her desire of being admitted to university/doing something interesting, and of wanting to move forward. However, as the data indicated, it was Lotta's desire to graduate from high school and be admitted to university to a study place of her liking that drove her to want to move forward.

As the analysis of the trajectories of the career goal appraisals showed (see, Figure 1), throughout the study Lotta reported being very much committed to her career goal. She also consistently experienced her career goal as difficult and stressful to achieve, and most of the time, Lotta felt confident about her ability to achieve her career goal. The exception occurred on week 24, when career goal confidence scores registered a sudden jump down, spiking up again the following measurement, on week 25. In contrast, Lotta's scores for career goal effort and progress were mostly low throughout the study. However, between weeks 21 and 28 the scores for career goal effort registered both a series of sudden jumps up and down, and a sequential steep increase. Similarly, between weeks 20–27, relatively sharp up and down jumps were observed in the scores of career goal progress, which registered its highest peak on week 27. Career goal progress was the only appraisal dimension whose time series registered a downward trend.

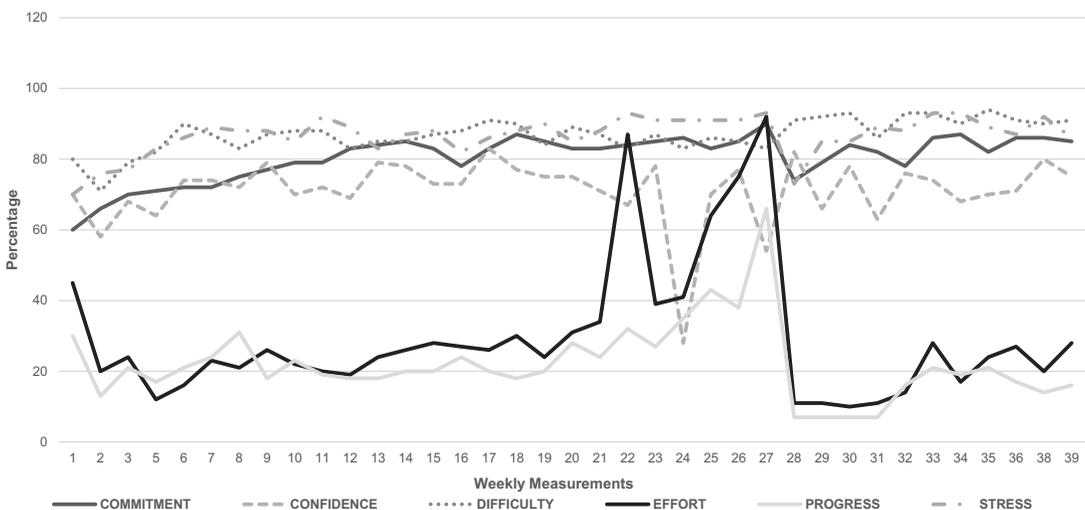


Figure 1. Lotta – Trajectories of the dimensions of the career goal appraisals across measurements (raw scores).

The ARIMA models computed for the appraisal dimensions revealed that (a) career goal commitment and effort best fitted the description of a simple exponential smoothing model; (b) career goal difficulty, progress, and stress were best characterized as differenced first-order auto-regressive models; and (c) career goal confidence consisted of a differenced second order auto-regressive model. Table 1 presents the summary of the results of the ARIMA models computed for each participant and each dimension of the career goal appraisals individually. Career goal confidence was the time series with the most strongly auto-correlated scores (autocorrelation at lag 2). Career goal confidence and difficulty, and career goal effort and progress were the only two pairs of appraisal dimensions to be significantly associated. Both correlations were positive. Table 2 shows the bivariate associations combining all possible pairs of the dimensions of the career goal appraisals for each participant individually.

**Table 1.** Summary of the results of the ARIMA models computed for each participant and each dimension of the career goal appraisals individually.

Goal appraisal dimension	Participant			
	Lotta	Hannaliisa	Maari	Henrik
Commitment	(0, 1, 1)	(2, 1, 0)	(1, 1, 0)	(1, 1, 0)
Confidence	(2, 1, 0)	(1, 0, 0)	(1, 1, 0)	(3, 1, 0)
Difficulty	(1, 1, 0)	(0, 1, 0)	(2, 1, 0)	(4, 1, 0)
Effort	(0, 1, 1)	(0, 0, 0)	(1, 1, 0)	(2, 1, 0)
Progress	(1, 1, 0)	(1, 1, 0)	(1, 1, 0)	(3, 1, 0)
Stress	(1, 1, 0)	(0, 1, 0)	(0, 0, 0)	(1, 1, 0)

ARIMA ( $p,d,q$ ) model:  $p$  = number of autoregressive terms;  $d$  = number of lagged forecast errors in the prediction equation;  $q$  = number of non-seasonal differences needed for stationarity. All values were significant at, at least,  $p < 0.05$ .

**Table 2.** Bivariate associations combining all possible pairs of the dimensions of the career goal appraisals for each participant individually.

Pairs of goal appraisal dimensions	Participant			
	Lotta	Hannaliisa	Maari	Henrik
Commitment * Confidence	0.099	0.244	-0.089	0.290
Commitment * Difficulty	0.298	-0.338 <sup>+</sup>	0.227	-0.282
Commitment * Effort	-0.038	0.107	0.385*	-0.020
Commitment * Progress	-0.154	0.036	0.129	-0.104
Commitment * Stress	0.278	0.059	0.165	0.001
Confidence * Difficulty	0.380*	0.107	-0.693**	-0.429**
Confidence * Effort	0.089	0.240	-0.240	0.295
Confidence * Progress	-0.121	0.018	0.505**	0.263
Confidence * Stress	-0.014	0.046	-0.394*	-0.009
Difficulty * Effort	-0.119	-0.190	0.220	0.018
Difficulty * Progress	-0.011	-0.024	-0.447**	-0.290
Difficulty * Stress	-0.112	0.012	0.546**	0.033
Effort * Progress	0.457**	0.223	0.097	0.390*
Effort * Stress	-0.210	-0.120	0.320 <sup>+</sup>	0.395*
Progress * Stress	0.024	0.293	-0.143	0.013

\*\*\* $p < 0.001$ . \*\* $p < 0.01$ . \* $p < 0.05$ . <sup>+</sup> $p$  marginally significant.

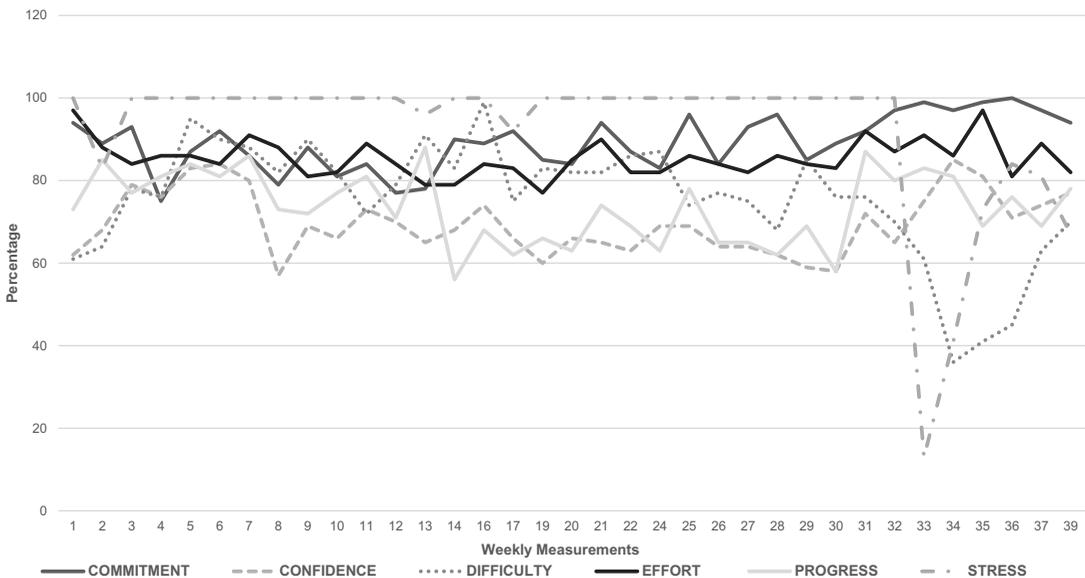
### Hannaliisa

Hannaliisa was either full/part-time studying for the entry exams or the matriculation examinations, which she often combined with part-time work, or full/part-time working. She reported changing her career goal four times. Except for week 14, Hannaliisa's career goal changes corresponded to measurements where she reported a superordinate career goal with a theme that was less common in her explanations about the importance of the goal. Two of the goal changes were instigated by the news that she had not been admitted to university that fall (week 14), and then that she had been accepted to

study in a foreign university starting next year's fall (week 33). This news led Hannaliisa to start worrying about saving money to pay for tuition. Changes in the career goal were not always apparent in Hannaliisa's answers to the question focusing on her subordinate career goal for which the following two core themes were consistently identified: To be admitted to university – Hannaliisa had in mind a demanding degree that required “lots of work and abilities” – and to earn/save money. The goal of being admitted to university was sometimes coupled with one of the following two goals: To think ahead/progress, and to find a job/to work. The majority of Hannaliisa's answers to the question on the superordinate goal referred to two core themes simultaneously. The most prevalent combinations involved Hannaliisa's desire to avoid a gap year/have something to do with her wanting to move forward, or to go to university/do something interesting.

Throughout the study, Hannaliisa's scores for the six appraisal dimensions were high (see, [Figure 2](#)). While career goal commitment showed an upward trend, career goal difficulty, effort, and stress showed a downward trend. Career goal confidence was the time series with the lowest overall scores. A lot of variation was also observed in the trajectories of the appraisal dimensions, particularly in the sequence of scores of career goal effort, which continuously went up and down across measurements and in a way that often appeared a bit erratic. A lot of variation was also evident in the pattern of fluctuation observed in the trajectories of career goal difficulty and of career goal stress, which registered their strongest variations around and immediately after week 33. Between weeks 31 to 34, the scores of career goal difficulty continuously decreased, with a sudden jump down being observed in week 33. Then, its scores started to gradually rise again. Between weeks 32 and 36, the scores for career goal stress registered a series of consecutive sudden jumps (one down and three up). Stress scores were otherwise mostly stable at the score of 100.

The ARIMA model computed for career goal commitment revealed a time series best described as a differenced second-order autoregressive model (see, [Table 1](#)). Other time series with auto-correlated scores were career goal confidence, which consisted of a first-order autoregressive model, and career goal progress that fitted the description of differenced first-order autoregressive model. The time series for career goal effort met the criteria for white noise, and the trajectories of career goal difficulty and stress were best characterized as a random walk (Hamilton, 1994). The only two appraisal dimensions to show a marginally significant negative association were career goal commitment and difficulty (see, [Table 2](#)).



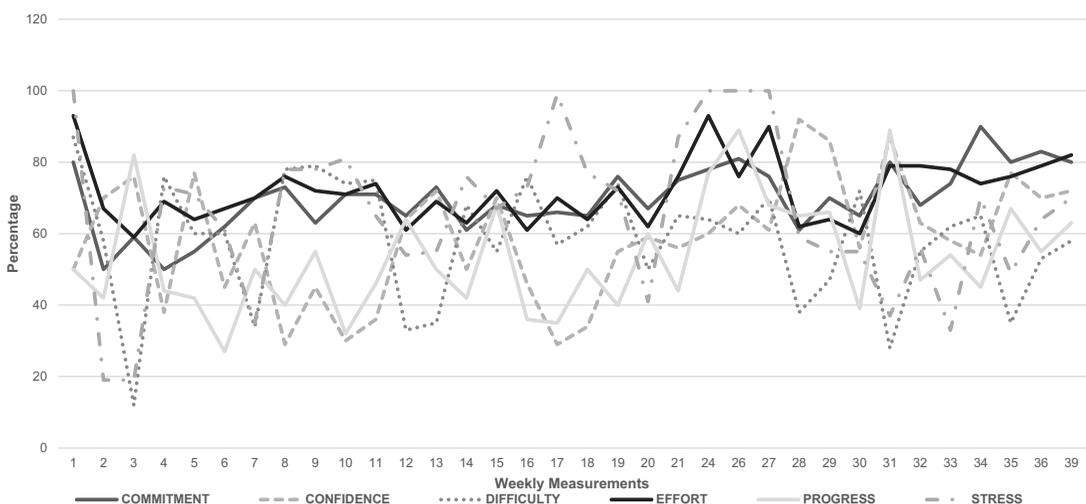
**Figure 2.** Hannaliisa – Trajectories of the dimensions of the career goal appraisals across measurements (raw scores).

## Maari

For most of the study, Maari was full/part-time studying and (part-time) working. She reported changing her career goal nine times and, except on week 28, all goal changes occurred on two consecutive measurements. On week 31, Maari's career goal change was motivated by the news she had been drafted to the army. The most common reason for Maari to change the career goal was coming to a decision/realization often about the amount of pressure she was experiencing and the need she felt to manage her stress levels and fatigue. On week 30, she wrote: "Too much pressure exhausted me, and laying in bed due to sickness made me realize how much I needed to rest."

Changes in Maari's superordinate goals were usually accompanied by a change in the core theme of her subordinate goal, and by her reporting a career goal change. Maari's most frequent weekly career goals were to relax/cope, and to make through the matriculation examinations and graduate from high school. The two themes most common in her superordinate career goals were to be well/in control, and to go to university/do something interesting. The combination most frequently observed in Maari's sub- and superordinate career goals was to relax/cope and to be well/in control. Examples of Maari's answers where these two core themes were simultaneously present are: "Not expect too much of myself" (subordinate career goal; week 2); "It causes too much stress when I pressure myself to give 100% in everything" (superordinate goal; week 2); "To find a balance between reading [studying], resting, and working" (subordinate goal; week 13); and "To avoid burnout" (superordinate goal; week 13).

As the results from the ARIMA models revealed, except for career goal stress, the time series of the appraisal dimensions were all differenced and auto-correlated at lag 1 – career goal commitment, confidence, effort, and progress – or at lag 2 – career goal difficulty (see, [Table 1](#)). The ARIMA model results for career goal stress were best described as white noise. The time series of career goal difficulty showed a descending trend, while the trend for the other four appraisal dimensions was ascending. As shown in [Figure 3](#), the trajectories of all appraisal dimensions but career goal stress (stationary time series) were characterized by a lot of moment-to-moment variations and by a large range in their scores. Six significant bivariate associations, three positive and three negative, were identified between the appraisal dimensions (see, [Table 2](#)).



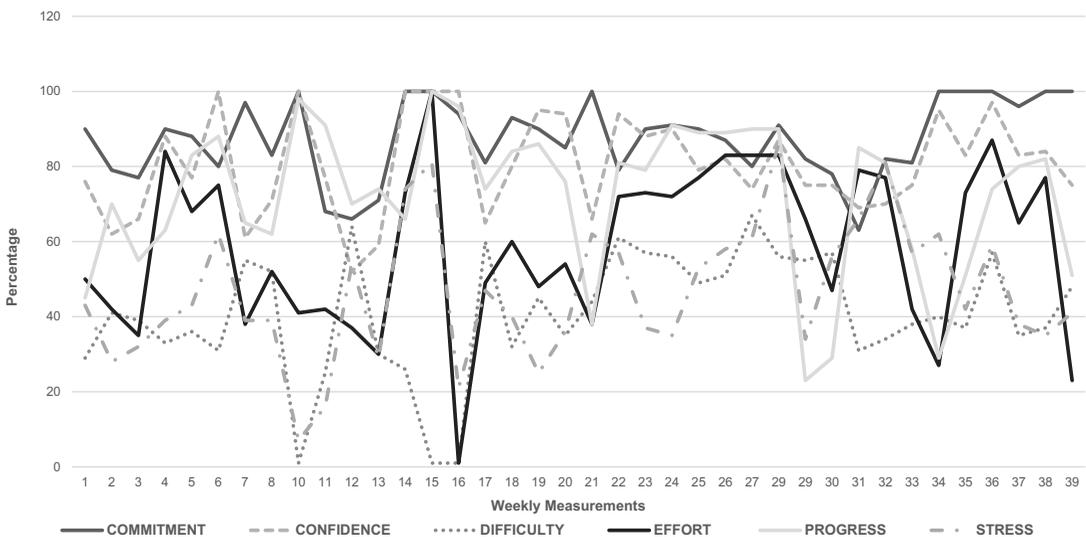
**Figure 3.** Maari – Trajectories of the dimensions of the career goal appraisals across measurements (raw scores).

## Henrik

During the study, Henrik was studying for the matriculation examinations or the entry exams, did not study nor work, and then started working full/part-time. Henrik was the participant that reported the highest amount of career goal changes – 17. A change in circumstances was what made him report a change in his career goal more frequently. Examples of his changed circumstances were: The coming up of the premiere and the end of the high-school musical he was helping to organize; the end of the entry exams and him knowing he had been accepted to study in university; the start or change of a job. Changes in the core theme of his superordinate goal were usually in synchrony with changes in the core theme of the subordinate goal. Week 15 and week 31 were the exceptions. On week 15, Henrik stated not having a career goal despite having reported a career goal change. According to Henrik, that week everything relating to his studies had been completed and he had just secured a job for the fall. On week 31, he finally realized his current job “can’t be learnt.” Henrik’s most common weekly career goals concerned his desire to think ahead/progress, to find a job/to work, and to learn about/do well at work. The following core themes presided to Henrik’s superordinate goals: To prepare for/hoping to progress, to get experience/progress in the job, and to earn/save money.

The time series of all appraisal dimensions showed a lot of variation in their scores. The sharpness of the up or down jumps in their scores as well as the steepness of some of the increasing or decreasing series of consecutive scores, were a distinctive feature of all the trajectories (see, [Figure 4](#)). Often, the sharpest jumps or the start/end of the steepest increases/decreases in the scores of the variables coincided with the moments where a career goal change was reported. Career goal difficulty, effort, progress, and stress were the dimensions of the career goal appraisals whose trajectories showed the sharpest fluctuations. The range of the scores was also typically high, and more than one of the appraisal dimensions registered scores of 1 and/or of 100. Career goal commitment and confidence were the only two appraisal dimensions to register scores consistently above 50. All time series except career goal progress showed an upward trend in their scores.

As the results from the ARIMA models showed, all time series were differenced and auto-correlated, and some of the autocorrelations between the scores of the time series were quite strong: (a) career goal commitment and stress auto-correlated at lag 1, (b) career goal effort was auto-correlated at lag 2, (c) career goal confidence and progress were auto-correlated at lag 3, and (d)



**Figure 4.** Henrik – Trajectories of the dimensions of the career goal appraisals across measurements (raw scores).

career goal difficulty was auto-correlated at lag 4 (see, Table 1). There were three significant associations, one positive and two negative, and one marginally positive significant association between the career goal appraisal dimensions (see, Table 2).

## Discussion

The aim of the present study was to examine how different young people going through the post-high school transition set, monitored, pursued, and renegotiated career goals in real-time and in everyday life circumstances. A ground-up analysis of the qualitative and quantitative data collected was conducted (Yin, 2018). The integration of findings allowed to arrive at a comprehensive and nuanced description of the mechanisms driving the processes through which each participant's career goal system organized and regulated itself as the young person navigated the post-high school transition (Waller et al., 2021). The assumption was that differences in processes of career goal construction are relevant for the formation of young people's identity.

Two main trends emerged from that data concerning the career goal system main properties and behavior over time. First, similarities were observed in how the participants' career goal system reacted to events challenging the specific positions and the structure of the interactions of its components (Van Geert & Van Dijk, 2015). Second, notwithstanding these similarities, there were also singularities. These singularities suggest a highly idiosyncratic organization of the career goal system components across the participants' individual systems (Kunnen, 2012). Additionally, study results evidenced the different reactions exhibited by each participant's career goal system to the micro-transitions they were confronted with throughout the study. These differences influenced both the career goals the participants set, monitored, pursued, and renegotiated, and the decisions they made about who they were or wanted to become as students or workers (Lichtwarck-Aschoff et al., 2008). However, there did not appear to be one optimal strategy, as the different patterns of behavior observed entailed both advantages and risks (Van Geert & Van Dijk, 2015).

### *Similarities in the Properties and Behavior of the Career Goal Systems*

Wanting to go to university was a goal common to all study participants. The significance this goal had for the four young people can be interpreted as a sign of their high educational aspirations, which are typical of Finnish youth, and of their awareness of the hardships entailed by the pursuit and achievement of such a challenging purpose (Salmela-Aro, 2020). Differences in their circumstances led the participants to position themselves differently toward this goal. Lotta's focus on and commitment to getting good grades, with the aim of ensuring acceptance to "study the field I want," persisted throughout the study. Before applying to university, she still had next year's spring matriculation examinations to get through. In turn, Henrik and Hannaliisa got the news they were accepted to a study place in university while the data were being collected, which made them set up different priorities for themselves. Finally, Maari put entering to university on hold after knowing she soon would be called to start her military service. It was unclear if Maari disengaged entirely from the goal of entering university or if she temporarily replaced it with her wanting to succeed in her job and in the army (Moskowitz, 2011).

Concomitantly, different pairs of appraisal dimensions had different weights in the behavior of different career goal systems. Across participants, the most common significant association between pairs of appraisal dimensions was between career goal confidence and difficulty, which was observed in three of the four participants. However, for two of these participants the correlation was negative, Maari and Henrik, and for the other, Lotta, it was positive. Except for the positive significant association between career goal effort and progress, which was present in Lotta's and Henrik's career goal system, all other significant correlations were identified only once. In contrast, the reporting of a career goal change (transition) by the young person was usually accompanied by a period of (sometimes intense) variability in the properties of the career goal system of all participants

(Kunnen, 2012). Such instability was evident both in the trajectories of the career goal appraisal dimensions and in how the sequences of core themes of the superordinate goals fluctuated. Typically, the reporting of a career goal change was accompanied by a change in the core theme of the superordinate career goal. This is consistent with the notion that is through the meaning and overall intentions guiding the process through which goals are constructed and organized that young people make sense of themselves and of their envisioned futures (Domene et al., 2015).

### ***Singularities in How Career Goals are (Re)constructed***

Being a university student was a central component of Lotta's imagined future self (Guichard et al., 2012). Her career goal system appears to have self-organized around this relatively consolidated attractor state, or what Van der Gaag et al. (2020) called a deep identity commitment valley. Lotta's awareness of the time elapsing from the moment the data were collected to her knowing if she had succeeded in achieving the goal – admission results were to be known in about 8 months – most likely determined how the resources of the system were managed (Freund & Baltes, 2000). Prior to the start of the fall matriculation examinations, the properties and behavior of Lotta's career goal system indicated her willingness to be prepared for and to address the challenge she knew was coming, as well as her need to be persistent and to ensure she was not spending too much energy with the effort (Salmela-Aro, 2001). With the end of the matriculation examinations, Lotta appeared to have placed herself on waiting mode. Her career goal system returned to a state similar to the one observed during the period preceding the fall matriculation examinations (Kunnen, 2012).

This strategy was probably what allowed Lotta to stay committed to and to identify with her choice of pursuing studies at the university level. It probably also allowed her to experience some control over events that, for the most part, she had little to no control over and, through that process, to carry on believing in her ability to achieve the goal, thus, to stay engaged and persist in goal pursuit (Heckhausen & Wrosch, 2016). The only event shaking Lotta's belief in her ability to achieve the goal were the upcoming fall matriculation examinations. However, she shook off this crisis in confidence quickly, which further indicates the significance – thus, the strength or depth and centrality – the image of herself as a university student had in Lotta's (vocational) identity (Bosma & Kunnen, 2001). Such significance merits questioning how she would react to the need of reconsidering her career goal and of finding alternative future images for herself. Two less positive outcomes of this scenario include Lotta's persistence in and overextension of her commitment to a career goal that no longer is adaptive, as well as her engaging in the continued reconsideration of her career goal(s) due to her feeling anxious and uncertain about herself and her future (Porfeli et al., 2011).

In contrast to Lotta's, Henrik's career goal system continuously bounced between different desired end states (or goals) in reaction either to current circumstances in his life or to what he foresaw or hoped would happen in the (near) future (Kunnen, 2012). Regardless, Henrik usually appeared to be clear about the concrete content and meaningfulness of his career goals. For example, he wanted to be admitted to university to a specific degree because an “interesting and good education would build my future to the right direction.” He also wanted to “get a job for May and the summer” because he needed money “to do things that I want (e.g., travelling).” Henrik combined short term with what appeared to be more distant goals, while committing to clear, concrete goals. He also did not constrain his options to a single desired end state. Probably, this was what allowed him to persist and often succeed in achieving the goal(s) he had set for himself (Freund & Baltes, 2000). Additionally, the flexible but coordinated way the components of his career goal system appeared to interact, suggests Henrik's engagement with broadly exploring alternatives that intended to ensure the flexibility of his career commitments (Porfeli et al., 2011).

In today's unpredictable and fluid (work) world, this flexibility may be advantageous, as it signals Henrik's awareness of and openness to the need of changing commitments according to circumstances (Porfeli & Lee, 2012). If complemented by in-depth exploration, the variety of experiences and actions attached to Henrik's in-breadth exploration of career choices and vocational identity commitments

will facilitate the emergence of a higher order system, which will be characterized by (highly) integrated or coherent sense of meaningfulness within the career domain and across domains of life (Van der Gaag et al., 2020). However, without exploring both in-breadth and in-depth, Henrik may find it hard to break with his need to continuously consider and be open to other potentially better fitting career alternatives (Porfeli & Lee, 2012). He may lock himself into bouncing between a series of isolated and shallow identity commitment valleys without a clear, strong engagement with a specific career goal or future image of himself (Van der Gaag et al., 2020). Ultimately, this may prevent Henrik from moving forward and finding a clear direction to what he wants or to whom he is and would like to become (Skorikov & Vondracek, 2011).

Hannaliisa was clear about what she did not want for herself: She did not want to have to take a gap year, which also meant she very much wanted to be admitted to university and to move forward. Concrete proximal goals, such as to avoid a gap year, have been associated with success in goal pursuit because they do not entail the vagueness inherent to generic goals, such as to move forward (Freund & Baltes, 2000). Similarly, specific difficult goals, like being admitted to a demanding university degree, tend to enhance performance and to increase the odds of succeeding in goal achievement (Latham & Locke, 2013). The mental contrasting of the overall intentions presiding to Hannaliisa's career goals is likely to be an accurate reflection of how she explored, projected herself into the future, and made decisions about her career (Oettingen et al., 2009). It probably also was what allowed Hannaliisa to stay (strongly) committed to goal achievement and performance. It appears to have been the singularity and dissonance attached to the experience of a negative significant event, such as not being accepted to study in a Finnish university, and to the emergence of less prevalent core themes in Hannaliisa's superordinate goals that made her report a career goal change. Most likely, these events operated as markers that brought some structure and coherence to an otherwise unstable and fluid system (Van Geert, 2019).

The presence of a weak regulatory mechanism probably is what led Hannaliisa's career goal system to adapt to a state of persistent instability, which appears to have only been interrupted by her finding out she had been accepted to study in a foreign university (Hamaker, 2012). From that moment onward, Hannaliisa became focused on earning/saving money and moving forward, which may be interpreted as a sign that her system started to direct itself toward an alternative, more stable state (Kunnen, 2012). However, it is unclear if Hannaliisa's career goal system was able to break with its previous pattern of behavior. If it did, the mental contrasting and unstable connections between the system components were the mechanisms her career goal system used to address the challenges brought about by the post-high school transition (Oettingen et al., 2009). If it didn't, the state of persistent instability that characterized her system was not transient. It may indicate a mode of overall functioning that is inherent to how Hannaliisa constructs meaning and gives coherence to herself and to her life in general (Guichard et al., 2012).

In Maari's case, a tension was evident between what appeared to be a consolidated attractor state – her wanting to push herself to progress in her career (studies and work), and while doing so to excel in her performance – and what looked like an emergent state – her wanting to feel less exhausted and with more energy (Kunnen, 2012). Every time Maari came to a decision/realization or that something of importance happened (e.g., being drafted to the army), the career goal system appeared to be pushed into exploring alternative configurations conducive to her feeling less exhausted or more in control (Van Geert & Van Dijk, 2015). However, the weight of the inertia resulting from the synchronized way the components of her system interacted, made it hard for it to break with previously established patterns of behavior (Kunnen, 2012).

For Maari, progressing in her career – which included being admitted to university and excelling in her performance regardless of the activity – was what was key for how she actively organized and positioned herself regarding her past, present and future images of herself as a student or as a worker (Guichard et al., 2012). In fact, Maari appeared to constantly want to “test my limits and prove my skills.” The Finnish school context, where prevails a highly competitive environment pressuring young people to excel, probably only reinforced Maari's commitment to and identification with high-

performance goals and aspirations (Salmela-Aro, 2020). The enormous pressure Maari reported experiencing to always perform at a high level made her feel stressed and exhausted to the point she got sick. This pressure not only echoed Salmela-Aro's (2020) concerns about the negative impacts of a performance-based school culture in young Finns wellbeing, but probably made it hard for the career goal system to move away from an attractor state that put Maari at risk of burning out.

### **Strengths and Limitations**

The present study adopted an exploratory research approach and was based on a longitudinal case study that relied on data collected with diary weekly reports (Stebbins, 2001). The study was designed as the first of a series of independent studies aiming to make sense of the wealth of data collected. Focus was on capturing different internal dynamics of the career goal systems illustrating the intra-individual processes through which young people navigating a major career transition set, monitor, pursue, or renegotiate career goals in real time and in everyday life circumstances. As Stebbins (2001) noted, this exploratory research approach will ultimately generate a body of robust evidence supporting the development of generalizations about the general dynamic laws that underlie real-time processes of career goal construction. However, much more needs to be investigated and many more studies need to be carried out before generalizations about study results are possible (Lichtwarck-Aschoff et al., 2008). For example, to what extent differences in the properties and patterns of behavior observed for each of the four selected cases can be generalized to a larger group of individuals? What role structural components influencing career and developmental processes, such as gender or cultural heritage, have in how young people (re)construct career goals over time? What are the relations these structural components maintain with young people's agentic abilities, namely their ability to set, pursue, monitor and renegotiate career goals? What are the main features of the moments where a career goal change is observed? Are these goal change triggers consistent across individuals?

Emphasis was placed on the process itself, and variability was assumed to be a fundamental property of the system and inherent to its dynamics of behavior and performance (Van Geert, 2019). As a result, and regardless of other relevant variables like gender or the young person's background, focus was placed on capturing diverse patterns of evolution of the career goal system through the identification and description of differences in how the order and structure of individual systems emerged, stabilized or changed over time. The richness, detail, and the amount of information generated by weekly reports based on daily life required limiting the number of cases to be studied. It was the combination of these conditions that allowed identifying complex and not always readily apparent patterns in the data explaining how, when, and why career goals are (re)constructed. This aligns well with the use of a research design relying on a case study approach, which is intended for "making *analytic* rather than *statistical generalizations*" (Yin, 2018, p. 58, italics in the original). This is a rigorous and flexible methodology allowing to combine different types of data and arrive at a comprehensive, in-context description of the real-time processes by which youth (re)construct career goals during a major career transition. However, the methodology does not allow to know if each of the selected cases are illustrative of systematic patterns of change between and within individuals (Nesselroade & Ram, 2004). Also, the four selected cases were the most expressive in the full data set and, in three of the four cases, the participants were female.

### **Conclusion**

The aim of the present study was to investigate, from an intra-individual perspective, the goals four young people going through the post-high school transition set, monitored, pursued, and renegotiated in real-time and in everyday life circumstances over a period of approximately 9 months. The study relied on a longitudinal case-study based on an exploratory research approach that used data collected with weekly diary reports. Prior to the present study, processes of career goal construction

were studied predominantly at the macro-level and did not specifically target the micro transitions and the individual system's change mechanisms driving the process through which goals are (re)constructed in real-time (Lichtwarck-Aschoff et al., 2008). Despite more studies being needed before generalizations about the present study results are possible, some interesting trends in the data were observed.

The analysis of the properties and behavior of the career goal systems of the four young persons participating in the study revealed that these systems exhibited some similarities, namely the susceptibility their components showed to variability around the time a career goal change (transition) occurred (Van Geert, 2019). These systems also were highly idiosyncratic and displayed a lot of variability across participants. Differences in how the career goal systems reacted to events challenging their organization provided insights into the mechanisms driving the processes through which career goals are (re)constructed (Kunnen, 2012). These reactions were shaped by the system's regulatory mechanisms and influenced how the participants addressed the post-high school transition and the formation of their identity. There did not appear to be one optimal transition strategy. There were advantages and risks in how each individual career goal system addressed conflict or the need to change.

## Notes

1. More information about the Materials and Method is included in the online supplementary materials, section on Additional Information on Materials and Method (see Appendix).
2. More information about the Results is included in the online supplementary materials, section on Additional Information on Results (see Appendix).

## Acknowledgments

The authors thank Prof. Saskia Kunnen for her support and insightful comments on the manuscript, and Milla Rautakorpi for her assistance with the study. Data collection would have not been possible without the technical support and collaboration of Denzil Ferreira and his team at the University of Oulu (Finland), particularly Kenedy Opoku Asare.

## Data Availability

The data that support the findings of this study are available on request from the corresponding author, FP. The data are not publicly available due to restrictions attached to their containing information that could compromise the privacy of research participants.

## Disclosure Statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by the Marie Skłodowska-Curie [749313-TeenEduGoals]. At the University of Jyväskylä, Filomena Parada was a Marie Skłodowska-Curie Actions Individual Fellow. This project received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie Actions, grant agreement 749313-TeenEduGoals.

## ORCID

Filomena Parada  <http://orcid.org/0000-0002-5704-2522>  
Katriina Salmela-Aro  <http://orcid.org/0000-0003-1901-4712>

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