Working Paper No. 221

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A successful transition of young people into the labor market is essential not only for individuals' future careers but also to tackle the shortage of skilled workers that firms are facing globally. While a large empirical literature has studied single determinants of a successful transition into the labor market, little is known about how different determinants interrelate and whether different determinants can complement each other or compensate for the non-existence of another. Drawing on conservation of resources theory and using a person-centered approach—fuzzy set qualitative comparative analysis (fsQCA)—we theoretically develop and empirically test a configurational approach to study the determinants of a successful labor market entry of young middle-skilled graduates. To test our configurational approach, we use a unique longitudinal dataset that merges comprehensive individual survey data of adolescents in an upper-secondary education and training program in Switzerland with administrative records on labor market outcomes within six years of graduation. The findings revealed that it is not single resources but a combination of human, personal, social capital and energy resources that determine a successful labor market entry of young people. Most importantly, the results showed that even when young individuals lack personal or parental resources, firms can offset these disadvantages by providing a positive apprentice-supervisor relationship to still ensure a successful labor market entry.

1   Introduction

As countries worldwide face major shortages of skilled workers, a key challenge for firms is attracting and retaining young graduates who enter the labor market for their first regular job (Brunello & Wruuck, 2021; Holtz-Eakin & Lee, 2019; ifo, 2022). In many countries, this shortage is particularly pronounced for middle-skilled jobs, i.e., jobs that do not require a college degree but demand specialized professional education and training (Modestino, 2016; Stephens, 2017). To address these labor shortages and ensure the long-term retention of middle-skilled workers, the time after finishing a formal professional training program and the first few years after entering the labor market are critical. These first steps heavily determine individuals' future careers and employability (De Fraja et al., 2021; Koen et al., 2012; Schmillen & Umkehrer, 2017; Shaw et al., 2019). To ensure that no graduate is left behind at this step, understanding the drivers and circumstances of a successful labor market entry of graduates from middle-skill professional training programs is crucial for firms facing labor shortages and for policy makers seeking to support both graduates and firms in thriving.

A large empirical literature has studied single determinants of early career and labor market success. Characteristics of young people and their environment found to promote a successful labor market entry include parental education (e.g., Karamessini et al., 2019), family wealth (e.g., Schioppa & Lupi, 2002), personality characteristics (Mendolia & Walker, 2015), the apprentice-supervisor relationship (Nägele & Neuenschwander, 2016), and friendship networks (e.g., Hällsten et al., 2017).

Even though these studies provide important insights into the determinants of early career and labor market success, a focus on the effects of single determinants does not systematically capture effects of factors that rely in their impact on other contingency factors, such as children's social background. As a result, a focus on the effects of single determinants most likely oversimplifies reality and may not yield the most effective policy recommendations (Hofmans et al., 2020). For example, studies on the importance of the personality trait "grit" (Duckworth et al., 2007) for educational and career outcomes have led to strong recommendations to teach grit in schools (e.g., Bashant, 2014). However, both educators and researchers have criticized these teaching recommendations, as a sole emphasis on grit may, inadvertently, overlook pre-existing social

inequalities and result in blaming disadvantaged children for not succeeding, (Metha, 2015; Mineo, 2022).

Consequently, there is a research gap in understanding how different determinants interrelate, whether different determinants can complement each other in synergistic ways or rather cancel each other, and whether the existence of one determinant can compensate for the non-existence of another. To address this research gap, a holistic and configurational empirical approach is required (Fiss, 2011; Hofmans et al., 2020). Although some labor market researchers have very broadly hypothesized that different determinants—i.e., human capital, personal capital, and social capital—jointly shape early labor market and career success (Caspi et al., 1998; Parker et al., 2009), empirical research has not yet examined such configurational hypotheses. In addition to the methodological focus on regression-type analyses, a systematic theoretical framework is also missing.

This paper thus aims to theoretically develop and empirically test a configurational framework to study the determinants of a successful labor market entry. To develop the theoretical framework, we apply a conservation of resources (COR) perspective (Hobfoll, 1989; Hobfoll et al., 2018) to the research on the determinants of labor market and career success (e.g., Caspi et al., 1998). COR theory posits that (a) individuals strive to maintain, protect, and obtain resources, (b) resources do not exist individually but are interconnected with each other and with an individual's environment, and (c) individuals with more resources are less vulnerable to resource loss (Hobfoll, 1989; Hobfoll et al., 2018). COR theory thus emphasizes the interconnection of resources and allows for hypotheses on whether, and, if so, how a lack of certain resources or a sudden resource loss can be compensated by other resources.

By integrating COR theory with the literature on the determinants of labor market and career success, we identify key resource types (i.e., energy resources, personal capital, human capital, and social capital resources) and develop configurational hypotheses. Specifically, we hypothesize that (1) a combination of human, personal, and social capital and energy resources—rather than single resources alone—determine young people's successful labor market entry, (2) multiple such resource configurations are linked to a successful labor market entry, (3) work-related social capital can compensate a lack of personal and/or human capital resources, and (4) resource loss

through adverse life events can be compensated by other resources to ensure a successful labor market entry.

We empirically test our configurational framework of a successful labor market entry by applying a fuzzy set qualitative comparative analysis (fsQCA)—a configurational approach that builds on Boolean algebra and identifies different combinations of attributes that are consistently linked to the occurrence of an outcome or to its absence (Fiss, 2011; Ragin, 2008). To test our configurational framework, we not only need an appropriate method but also longitudinal data that provides rich individual-level information on the resources of young people, information on their training environment, and objective data on whether they experienced a successful labor market entry in the years immediately following graduation. We create a dataset that ideally fulfills these requirements. The dataset combines rich Swiss survey data on young people during their initial training after compulsory schooling, i.e., while they are trained in companies for a recognized apprenticeship with administrative register data on their employment spells in the six years after entering the labor market. This longitudinal dataset allows us to study whether and which configurations of different types of resources—such as grit, parental education, and the apprentice-supervisor relationship—in combination with sudden resource losses during an upper secondary training program are linked to a successful labor market entry of middle-skilled graduates in the six years after graduation.

This paper contributes to the literature on the determinants of labor market and career success in three ways. First, it contributes to this literature by providing a theoretical framework on configurations of determinants that shape a successful labor market entry. This theoretical framework allows for different determinants to complement and compensate each other and, therefore, moves beyond traditional variable-centered approaches that focus only on one or a few determinants at a time. Second, the paper contributes to COR theory—one of the most frequently referenced theories in organizational behavior and management studies (Halbesleben et al., 2014). While COR theory employs configurational arguments (e.g., emphasizing the interconnectedness of resources), most researchers have relied on regression-based methods to test the theory. By providing a novel approach to test the core concepts of COR theory, this paper bridges the gap between COR theory and empirical studies. Third, the paper contributes to the literature and public discussion on the personal capital resource "grit" as a determinant of career and life success. For the first time, we explore (a) grit's configurational interconnections with other determinants of

labor market and career success and (b) the long-term labor market consequences of grit by employing a long-term longitudinal design.

2   Theory and Hypotheses Development

To develop hypotheses and a theoretical framework on resource configurations that enable a successful labor market entry, we proceed in three steps (see Figure 8). First, we introduce conservation of resources theory (Hobfoll, 1989; Hobfoll et al., 2018). Second, to understand the different types of determinants that contribute to labor market and career success, we draw on frameworks from the labor market and career success literature (Caspi et al., 1998; Parker et al., 2009; Spini & Widmer, 2023). Finally, in the third step, we apply conservation of resources theory to the literature on labor market and career success (Caspi et al., 1998; Parker et al., 2009; Spini & Widmer, 2023) to derive hypotheses on resource configurations for a successful labor market entry.
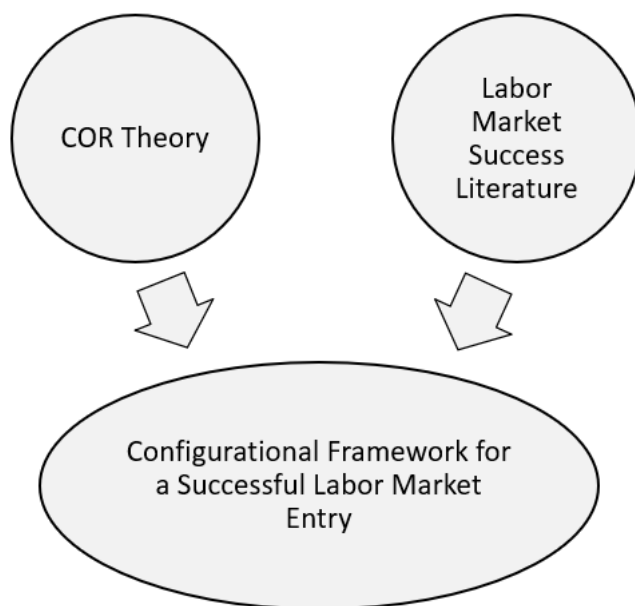

Figure 1:   **Theory development process**

2.1 Conservation of Resources Theory

Conservation of resources (COR) theory (Hobfoll, 1989; Hobfoll et al., 2018) posits that individuals strive to obtain, maintain, and protect resources. COR theory defines resources as those things people centrally value and that support their goals (e.g., employment, money, or personality resources; Hobfoll, 1989; Hobfoll et al., 2018; Halbesleben et al., 2014). Resources can include object resources (e.g., socioeconomic status), conditions (e.g., good work relationships), personal resources (e.g., personality traits), and energy resources (e.g., money), which help individuals to acquire other resources (Hobfoll 1989; Hobfoll, 2011). The theory further includes a set of principles such as the *primacy of resource loss, resource investment, resource caravans,* and *resource caravan passageways*.

The *primacy of resource loss* principle states that a resource loss is more harmful than a resource gain is helpful, while the *resource investment* principle states that people need to invest resources to prevent resource loss, recover from resource losses, and gain new resources. From this principle, the theory derives the concepts of *loss and gain spirals*: People who have more resources are "less vulnerable" to losing them and "more capable of orchestrating resource gain" (Hobfoll, 2011, p. 117). In contrast, people who have fewer resources are "more vulnerable to resource loss and less capable of resource gain" (Hobfoll, 2011, p. 117). Finally, COR theory posits that resources do not exist and operate in isolation but are interconnected (a) with one another, that is, they travel in *resource caravans* (Hobfoll, 2011; Layne et al., 2008) and (b) with an individual's environment (i.e., what the theory calls *resource caravan passageways*).

Because COR theory emphasizes the interconnection of resources, the theory allows for hypotheses on whether, and if so, how a lack or loss of certain resources can be compensated by other resources. Therefore, COR theory constitutes an excellent starting point for developing a configurational theoretical approach for analyzing a successful labor market entry. However, COR theory provides a very broad framework for a wide range of contexts. Thus, to identify particular resource configurations, Hobfoll et al. (2018) recommend that researchers integrate it with more context-specific theories. Therefore, to develop a configurational framework on resources that enable a successful labor market entry, we integrate conservation of resources theory with the literature on labor market and career success. We thereby draw on frameworks that identify different types of determinants that contribute to labor market and career success (Caspi et al., 1989; Parker et al., 2009; Spini & Widmer, 2023).

2.2   Labor Market and Career Success Literature

Even though *empirical* studies analyzing labor market success have predominantly focused on the effects of single determinants, there are *theoretical* arguments that view labor market success as the result of the interplay of multiple dimensions. Caspi et al. (1998) conceptualize individual differences in the transition to the labor market as the result of three types of capital: human capital, social capital, and personal capital.

Human capital encompasses the resources that people possess or acquire for maximizing their employability (Caspi et al., 1998). It includes not only academic achievements and cognitive ability but also parental resources, such as knowledge about the education system and how parents can support their children). *Personal capital* refers to resources affecting "both the motivation and capacity to work" (Caspi et al., 1998, p. 428) and therefore includes personality characteristics. Finally, *social capital* consists of those relationships providing "access and control" over different kinds of resource (Caspi et al., 1998, p. 428). These relationships can be *work-related* (Prusak & Cohen, 2001), such as the leader-employee relationship (e.g., Harris et al., 2011) or work-unrelated, such as an individual's network of friends (e.g., Hällsten et al., 2017).

Caspi et al. (1998) argue that a constellation of human, personal, and social capital resources join to shape a successful labor market transition. Even though this proposition has not been directly empirically tested[1], it is in line with more recent sociological research on vulnerability, which theorizes that different domains (e.g., family and work) interact and thus shape individuals' life chances (Spini & Widmer, 2023). Caspi et al.'s (1998) typology is also in line with intelligent career theory (Beigi et al., 2018; Defillippi & Arthur, 1994; Parker et al., 2009), which posits that three "ways of knowing" drive career success: knowing-why (i.e., an individual's personal capital), knowing-how (i.e., an individual's human capital) and knowing-whom (i.e., an individual's social capital). To develop a configurational framework for a successful labor market entry, we now connect this literature on labor market and career success with COR theory.

2.3   A Configurational Framework for a Successful Labor Market Entry

Figure 9 shows our configurational framework for a successful labor market entry that we will explain step by step. In the first step, our framework identifies key resources that promote a

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[1] Caspi et al. (1998) analyzed the isolated effects of the different capitals.

successful labor market entry. By integrating COR theory (Hobfoll, 1989; Hobfoll et al., 2018) with the labor market and career success literature (Caspi et al., 1998; Parker et al., 2009; Spini & Widmer, 2023), we argue that human capital, personal capital, and social capital can be seen as key resource types that support a successful labor market entry.

However, while these human, personal, and social capital resources fit well into the definition and categorization of resources in COR theory, these types do not cover one key resource type that plays an important role in COR theory: energy resources (Hobfoll, 1989). Energy resources such as money play a key part in COR theory as they help individuals acquire other resources (Hobfoll, 1989). Because with the help of energy resources such as money individuals can acquire things and skills needed in a given situation (e.g., professional photographs for job applications), we argue that energy resources help shape a successful labor market entry in addition to human, social, and personal capital resources.
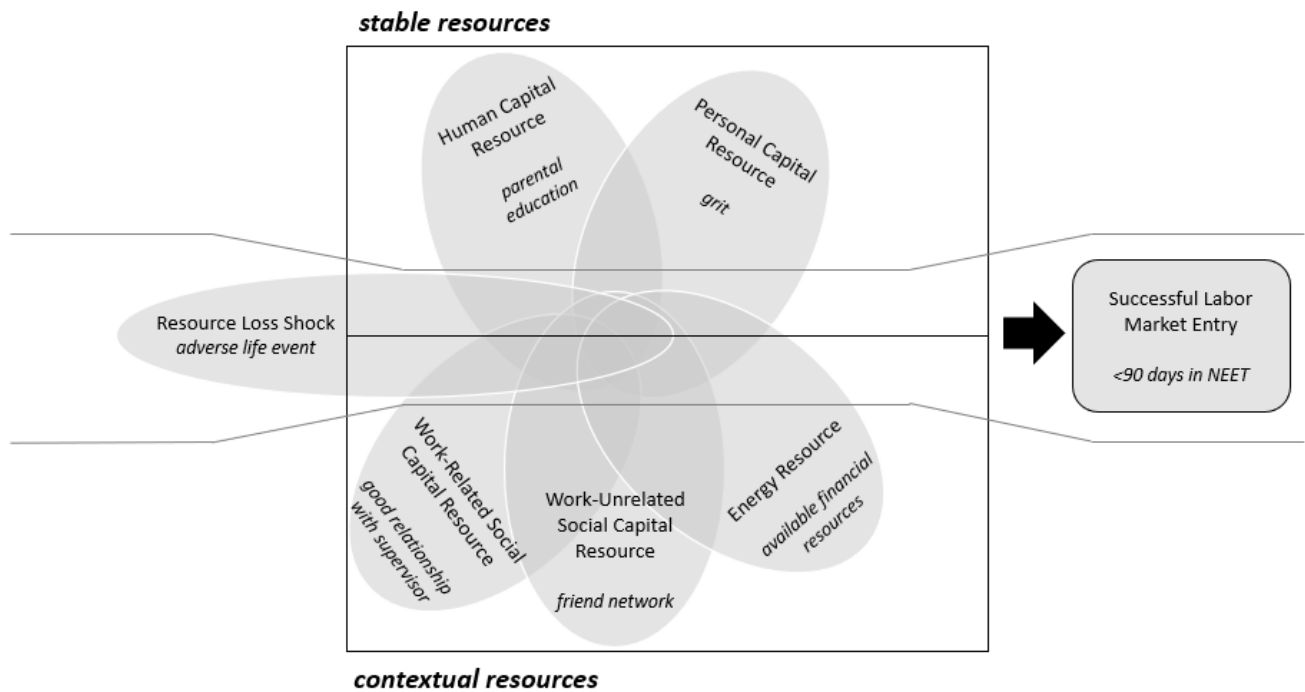

Figure 2: Configurational framework for a successful labor market entry

Notes. Our operationalizations of the resource types and the outcome as discussed in section 3 are written in cursive.

In the second step, we categorize our resources into two groups: *stable* resources, which are those an individual possesses at labor market entry (i.e., personal capital and human capital) and *contextual* ones that are more prone to change and can differ according to an individual's environment. We argue that this distinction is useful from a policy perspective because it allows analyzing questions such as whether and, if so, how individuals can achieve a successful labor market entry despite unfavorable individual circumstances (i.e., low personal and human capital resources).

In the third step, we draw on the *resource caravan* principle of conservation of resources theory, which emphasizes that it is rarely a single resource that shapes outcomes but rather a combination of resources (Hobfoll, 2011). We thus conceptualize the resources in our framework as intersecting with other resources—both stable and contextual—and derive our first hypothesis:

Hypothesis 1: It is not single resources but a combination of human capital, personal capital, social capital, and energy resources that determine young people's successful labor market entry.

In addition, from the *resource caravan* principle in combination with the *resource investment* principle we derive that resources can compensate for one another (Hobfoll, 1989; Hobfoll et al., 2018) and, as a result, not only one resource configuration but different resource configurations (i.e., different resource caravans) will be sufficiently linked to a successful labor market entry. We thus derive our second hypothesis:

Hypothesis 2: Multiple resource configurations are linked to a successful labor market entry.

Related to hypothesis 2, we are—from a policy perspective—specifically interested in whether, and if so, how firms can help in keeping young graduates with starting disadvantages in the labor market. We therefore aim to specifically analyze whether work-related social capital can compensate a lack of stable personal and human capital resources:

Hypothesis 3: If young people lack stable personal and/or human capital resources (e.g., grit or parental education), this lack can be compensated through work-related social capital resources in order to ensure a successful labor market entry.

Finally, we add a resource loss shock to our configurational framework to analyze whether, and if so, how resource loss through adverse life events (such as parental divorce, parental unemployment, or the death of a relative) can be compensated by other resources to still ensure a successful labor market entry. The concept of *loss and gain spirals* of conservation of resources theory suggests that those with greater resources are less vulnerable to resource loss. We therefore derive our fourth hypothesis:

Hypothesis 4: Resource loss through major life events (such as the death of a relative) can be compensated by other resources to ensure a successful labor market entry.

3. Data and Method

3.1 Data

To empirically test our configurational framework for a successful labor market entry of middle-skilled graduates, we require longitudinal data that offers detailed individual-level information on the resources and sudden resource losses of young people. Additionally, we need objective information on their labor market entry in the years immediately following graduation.

We create a dataset fulfilling these requirements by combining two data sources in the setting of Switzerland's Vocational Education and Training (VET) system, in which adolescents receive their initial training after compulsory schooling. In Switzerland, two-thirds of the Swiss adolescent population participate in this VET system. VET programs typically last three to four years and combine an on-the-job apprenticeship at a training firm (3.5 to 4 weekdays) with formal education at a vocational school (1 to 1.5 weekdays). This setting allows us to not only look at personal and human capital resources but also at resources firms can provide when training young people for the labor market such as work-related social capital. In this setting, we combine rich information on young people during their training program with administrative register data on their employment spells after entering the labor market.

Specifically, to measure resources and sudden resource losses of young people before labor market entry, we use data from the Leading House Apprenticeship Panel. This panel data set was started in 2009 with adolescents who had just started their VET program in Switzerland (for a detailed description of the data see Oswald & Backes-Gellner, 2014). The panel follows 265 students in VET from fourteen complete school classes and three occupations (i.e., commercial employee, mechanical engineer, electrician).

To measure a successful labor market entry after completion of the VET program, the Leading House Apprenticeship Panel data is merged with the LABB data from the Swiss Federal Statistical Office from 2012 until 2019 (SFSO, 2020b). The LABB data are generated through linkage of different educational and labor registers and provide detailed information on employment and unemployment spells of individuals.[2] The merged sample consists of 256 individuals, of which 217 provided complete information on all measures used in this study.

The merged panel data structure allows us to combine detailed individual level data on young people's resources during their training with long-term labor market outcomes. For the personal capital resource "grit" we have—compared to previous studies—one of the longest timespans between the measurement of grit and our outcome variables. Since grit was incorporated into the Leading House Apprenticeship Panel right when it was introduced by Duckworth et al. (2007) and Duckworth and Quinn (2009), we are able to measure the importance of grit in connection with other resources for labor market outcomes up to ten years later (unlike most grit studies that use either cross-sectional data, measure outcomes retrospectively, or focus on a time-span of two to three years; Credé et al., 2017; Duckworth et al., 2007; Duckworth & Quinn, 2009). Figure 10 shows the time structure of our data in detail.[3]

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[2] i.e., whether an individual is «in employment», «in education», «in education and employment», «NEET: registered as unemployed», «NEET: receives disability insurance benefits», «NEET: receives benefits from the income compensation scheme (Erwerbsersatzordnung)», or «NEET: other». NEET stands for «Not in Education, Employment or Training»

[3] Figure 1 shows the time structure for the VET programs "mechanical engineer" and "electrician". These VET programs lasted four years (from 2009 until 2013) and we observed these students labor market outcomes for the following six years, that is, from 2013 until 2019. In contrast, the VET program "commercial employee" only lasted three years (from 2009 until 2012). To keep the duration of the observation period constant, we observed the labor market outcomes of commercial employees also for six years after their graduation, that is from 2012 until 2018.
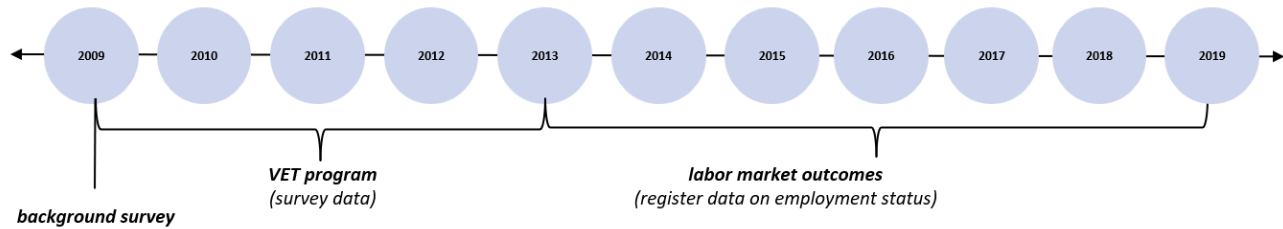
Figure 3: Time structure

3.2   Measures

Successful Labor Market Entry. We measure our outcome variable with the days not spent in unemployment in the first six years after graduating from the VET program. We define unemployment as either being registered as unemployed or being NEET, i.e., not in education, employment or training. We do not count individuals as unemployed if they receive benefits because they are on maternity leave or in the military or if they receive disability insurance benefits.

Personal Capital Resource. We measure personal capital resources with the personality trait grit (Duckworth et al., 2007; Duckworth & Quinn, 2009). Grit is defined as the perseverance and passion for long-term goals (Duckworth et al., 2007). In the Leading House Apprenticeship Panel, grit is measured in 2009 (i.e., in the first year of adolescents' VET program) with the 8-item Grit scale developed in Duckworth and Quinn (2009). The Grit scale includes items assessing consistency of interests (e.g., "I have been obsessed with a certain idea or project for a short time but later lost interest"; reverse scored) and perseverance of effort (e.g., "Setbacks don't discourage me") and uses a 5-point Likert-like scale from 1 = not at all like me to 5 = very much like me.

Human Capital Resource. Drawing on the economics of education and labor market literature (e.g., Currie & Moretti, 2003; Strauss & Thomas, 1995), we measure human capital resources with an adolescent's mother's highest educational degree (i.e., "What is the highest educational degree your mother has earned? 1 " No school-leaving certificate" 2 "Compulsory school" 3 "Vocational education and training" 4 "Federal examination (e.g., master craftsman)" 5 "College of higher education" 6 "Baccalaureate" 7 "University" 8 "Other, namely""). We choose mother's education rather than an individual's education because in our setting all adolescents obtain the same educational level.

Work-Related Social Capital Resource. We measure work-related social capital resources with an adolescent's assessment of the quality of their relationship with his or her trainers and supervisors at the training company. We measured the apprentice-supervisor relationship in 2010 with the item "Now please think about your training company. How strongly does the following statement apply to you? My interactions with the vocational trainers and supervisors in the company are free of conflict." The item uses a 5-point Likert-like scale from 1 = completely wrong to 5 = completely right.

Work-Unrelated Social Capital Resource. We measure work-unrelated social capital with an adolescent's friend network. We measured an adolescent's friend network in 2010 with the item "How many friends do you have at the moment?" 1 "Up to 10" 2 "10 to 20" 3 "More than 20."

Energy Resource. We measure energy resources with an adolescent's financial resources. We measure adolescent's financial resources in 2010 with the item "How difficult is it for you to spontaneously raise CHF 100?" The item uses a 5-point Likert-like scale from 1 = very difficult to 5 = very easy.

Resource Loss Shock. We measure a resource loss shock with the occurrence of adverse life events during the training period of adolescents. We measure adverse life events with the items "When you think about your personal situation, how accurate are the following statements? I have been affected by a difficult family change (e.g., divorce, unemployment father or mother, death, illness)." And "When you think about your personal situation, how accurate are the following statements? I have been affected by a difficult change outside the family (e.g., death within the school class, at the training place)." Both items use a 5-point Likert-like scale from completely wrong to 5 = completely right.

3.3   Qualitative Comparative Analysis

As we expect configurations of personal capital, human capital social capital, and energy resources to explain a successful labor market entry, we apply fuzzy set qualitative comparative analysis (fsQCA), a configurational approach focusing on combinations of conditions that explain an outcome rather than individual effects of single variables (Gabriel et al., 2018). The fsQCA method is based on Boolean algebra and aims to explore necessary and sufficient combinations of conditions for an outcome (Ragin, 2000, 2008; Schneider & Wagemann, 2012). The method uncovers the complex forms of causality that we theorize (Ragin, 2008; Schneider & Wagemann,

2012). We expect combinations of resources to shape a successful labor market entry (hypothesis 1), which—in the language of QCA—is an example of conjunctural causation (i.e., each path consists of a combination of conditions). Furthermore, we expect there to be multiple resource combinations sufficiently linked to successful labor market entry (hypothesis 2), which is an example of equifinality (i.e., different paths are linked to the same outcome).

3.4   Calibration of Conditions

Prior to the fsQCA analysis, the raw values from our data set need to be calibrated into so-called fuzzy values ranging continuously from non-membership (0) to membership (1) (Ragin, 2000, 2008; Schneider & Wagemann, 2012). As fsQCA is a set theoretic method, set membership of cases need to be assigned based on theoretical and case knowledge. We follow the direct method of calibration, which requires decisions on three important anchor points: full membership in a set (0.95), full non-membership (0.05) and, most importantly, the point of maximum ambiguity that distinguishes membership from non-membership (0.5). It is important that no value is directly assigned towards the 0.5 point.

Table 25 depicts our decisions on calibration for each (outcome) variable: We define our outcome of interest as *successful labor market entry.* The crossover point is marked by up to 90 days of unemployment within the first six years after graduation, because 90 days is a frequently used cut-off in studies of youth unemployment and in policy interventions (e.g., Carling & Larsson, 2005; Doiron & Gørgens, 2008; Grönqvist, 2011). The outcome is fully in a set with 0 days of unemployment in the first six years after apprenticeship and fully out of the set with 270 days or more of unemployment in the first six years after apprenticeship. For *adverse life event*, the crossover point is marked by more than 3 (i.e., if a person agrees that he or she has been affected by a difficult change inside or outside the family). The value for fully in the set is 5 and the value for fully out of the set is 1. For *grit*, the crossover point is marked by 3.4. This value represents the mean value of our sample but more importantly, it represents the mean of the original study on the Short Grit Scale (Duckworth & Quinn, 2009). The value for fully in the set is 5 and the value for fully out of the set is 1.

For *higher education mother*, the crossover point is marked by more than 3. A value of more than 3 means that the mother's education level is higher than vocational education and training, which is the education level the adolescents in our sample achieved before entering the labor

market. We argue that if mothers have a higher educational level than their children, they can optimally support them in their education. The value for fully in the set is 7 and the value for fully out of the set is 1. For *good relationship with supervisor*, the crossover point is marked by more than 4.5 (i.e., completely agreeing to having a conflict-free relationship with trainers and supervisors). The value for fully in the set is 5 and the value for fully out of the set is 1. For *financial security*, the crossover point is marked by more than 3. This decision sets adolescents below the average of financial security towards the set of non-membership. The value for fully in the set is 5 and the value for fully out of the set is 1. Lastly, for *friend network*, the crossover point is marked by more than 1 (i.e., a friend network of more than 10 friends). The value for fully in the set is 3 and the value for fully out of the set is 1.

Table 1: Calibration of conditions

Condition / Outcome	Raw value	Fuzzy-set value
Successful Labor Market Entry	0	1
(i.e., absence of unsuccessful labor market entry)	90	0.501
	270	0
Adverse Life Event	5	1
	3	0.499
	1	0
Grit	5	1
	3.4	0.501
	1	0
Higher Education Mother	7	1
	3 (VET)	0.499
	1	0
Good Relationship with Supervisor	5	1
	4.5	0.499
	1	0
Financial Security	5	1
	3	0.499
	1	0
Friend Network	3	1
	1	0.499
	1	0

Notes: For each condition and outcome, we assign the «raw values» of our data to «fuzzy-set values» that indicate full membership (1), the crossover point (0.501/0.499), and full non-membership (0).

4. Steps of Causal Analysis and Results

In fsQCA, complex, configurational causal links are examined in two steps, namely the analysis of necessary conditions followed by the analysis of sufficient conditions. In line with fsQCA methodology, we first conducted a necessity analysis. According to our theoretical framework, in which resources operate in caravans, we do not expect any necessary conditions. Table 26 shows the results for the analysis of necessary conditions (Ragin, 2000, 2008; Schneider & Wagemann, 2012). A condition is necessary if, whenever the outcome is present, the condition is present as well. For fuzzy sets, this implies that the value of the condition X exceeds the value of the outcome Y. In noisy data, one cannot expect this rule to hold for each case. Therefore, parameters of fit are utilized to evaluate degrees of necessity, namely consistency and relevance of a condition. The

consistency score needs to be larger than 0.9 (Ragin, 2006) for a condition to be considered as almost necessary. There is no clear threshold for relevance although it is usually considered that it should exceed 0.5 by far (Schneider & Wagemann, 2012). Finally, it is recommended that the coverage should be larger than 0.8 (Vos & Cambré, 2017).

Overall, the analysis does not indicate that any condition is necessary in any relevant ways. There is only one condition – *friend network* – for which the consistency threshold exceeds 0.9. However, its relevance score is only at 0.36, so the condition should not be considered a necessary condition in any causal sense (Schneider & Wagemann, 2012). Apparently, a dense friend network is quite common among young workers with a successful labor market entry. Therefore, though the condition meets the formal requirement of a necessary condition, it should not be considered relevant in explaining the positive outcome. The conditions can still be part of the sufficient combinations of conditions we find.

Table 2:   Necessary conditions for a successful labor market entry

Condition	Successful Labor Market Entry		
	Consistency	Relevance of Necessity	Coverage
Adverse Life Event	0.583	0.792	0.740
~ Adverse Life Event	0.553	0.778	0.712
Grit	0.655	0.807	0.789
~Grit	0.594	0.856	0.809
Higher Education Mother	0.631	0.800	0.771
~ Higher Education Mother	0.598	0.845	0.800
Good Relationship with Supervisor	0.766	0.663	0.740
~Good Relationship with Supervisor	0.394	0.884	0.745
Financial Security	0.806	0.581	0.717
~ Financial Security	0.355	0.928	0.804
Friend Network	0.935	0.360	0.699
~Friend Network	0.197	0.978	0.869

Notes: The tilde symbol (~) indicates the absence of a condition.

The sufficient configurations for a successful labor market entry are shown in Table 27. A condition is sufficient if, whenever the condition is present, the outcome is present as well (Ragin, 2000, 2008; Schneider & Wagemann, 2012). For the analysis of sufficiency, fsQCA makes use of

a truth table algorithm. The truth table depicts all logically possible combinations of conditions (see Appendix A). This is calculated as 2^k, with k being the number of conditions. Here we use 6 conditions, so 64 different configurations are logically possible.

Before the truth table can be minimized to arrive at conclusions about sufficient combinations of conditions, three decisions need to be made concerning cut-offs for frequency of cases, consistency, and PRI (Proportional Reduction in Inconsistency). In large-N QCA samples exceeding 50 cases, it is recommended to impose a minimum number of cases for each ideal type (Greckhamer et al., 2013). We set a frequency cut-off of 3 cases, allowing us to focus on resource combinations that occur more than once or twice. With 88% of cases retained in our sample, we easily surpass the threshold of 80% retained cases recommended by Greckhamer et al. (2013). A consistency cut-off is imposed because with noisy data, the sufficiency condition does not hold for each and every case in a given ideal type. The choice of the consistency threshold determines to what degree an ideal type is considered sufficient for the outcome despite some deviations form perfect sufficiency. A PRI cut-off is imposed because sometimes conditions are skewed, i.e., we observe many cases with values close to 0 and to 1. Then, it is possible to identify an ideal type as being sufficient for the outcome and, at the same time, for the negated outcome. Therefore, only combinations of conditions meeting the minimum PRI threshold should be considered sufficient. We set a consistency threshold of 0.85 and a PRI threshold of 0.75, which are both in line with recommendations for good practice (Greckhamer et al., 2018; Ragin, 2008; Schneider & Wagemann, 2012).

By minimizing the truth table, the links between combinations and conditions can be expressed in more compact ways that lend themselves to theoretical interpretation. Some ideal types are not observed at all or less than the 3 times we impose as frequency threshold. Therefore, researchers need to make assumptions concerning the expected outcome—absent or present—for unobserved ideal types ("remainders"). From such assumptions, two types of easy-to-interpret solutions can be derived. The most parsimonious solution assumes that all remainders can be connected with the presence of the outcome. An intermediate solution assumes that only particular conditions or their presence in the remainders will bring about the presence of the outcome. Here, we expect the presence of each of the resources grit, the higher education of the mother, a good relationship with the supervisor, financial security, and a friend network to contribute positively to a successful labor

market entry. For adverse life event, we expect the absence of such an event to contribute positively to the outcome.

The results of the analysis of sufficiency are shown in a "Fiss chart" in Table 27 (Fiss, 2011; Ragin & Fiss, 2008). Black circles indicate the presence of a condition and circles with a cross-out indicate the absence of a condition. Blank spaces indicate that it does not matter for a solution path whether a condition is present or absent. Large circles indicate a core condition while small circles indicate a peripheral condition. Core conditions are defined as those conditions that are part of the parsimonious and intermediate solutions. Peripheral conditions are defined as those conditions that are only part of the intermediate solution (Fiss, 2011).

In total, five different, equifinal paths to a successful labor market entry can be identified: Solution path 1 shows that in the absence of grit and the absence of a higher education of the mother, the presence of a good relationship with the supervisor at the workplace and a friend network will sufficiently explain a successful labor market entry. In other words, the good relationship with the supervisor and a friend network form a resource combination that compensates for the absence of other resources, grit and a highly educated mother Similarly, solution path 2 again shows that the absence of grit and the absence of a higher education of the mother can be compensated when combined with a good relationship with the supervisor, financial security and a friend network. In solution path 3, we find the absence of a higher education of the mother compensated by a good relationship with the supervisor, financial security and a friend network. Next, solution path 4 shows that when individuals are faced with an adverse life event and when a higher education of the mother is missing, they need to combine grit with a friend network for a successful labor market entry. Finally in solution path 5, an adverse life event and a lack of grit can be compensated with a higher education of the mother along with financial security and a friend network.

According to these results, we find support for both our Hypothesis 1 and Hypothesis 2: It is not single resources but a combination of human, personal, social capital and energy resources that determine a successful labor market entry of young people (Hypothesis 1) and multiple resource configurations are sufficiently linked to a successful labor market entry (Hypothesis 2).

Specifically, the five paths can be categorized into two broad patterns. The first pattern is represented by the paths 1, 2, and 3. In each of them, adolescents with low personal capital

(measured by grit), low human capital (measured by mother's education) or both apparently overcome these individual disadvantages and still achieve a successful labor market entry—but only when they have access to one or several social capital or energy resources during their training period, namely a good relationship with their supervisor, high financial means, or an extensive network of friends, or combinations of those. Most importantly, we find a good apprentice-supervisor relationship in the majority of paths with a lack of stable personal and/or human capital resources (paths 1, 2, and 3), suggesting that this work-related social capital provides a crucial way of keeping young people with starting disadvantages in the labor market. This first pattern thus provides support for our Hypothesis 3.

A second pattern is represented in paths 4 and 5, in which adolescents experienced an adverse life event during the training phase. Such adolescents are able to compensate this resource loss and still achieve a successful labor market entry when they either show a high level of the personal capital resource grit (path 4) or have a family background with higher levels of education of their mother and a high financial security together with an extensive network of friends (path 5). We thus find support for Hypothesis 4, which proposed that resource loss through adverse life events (such as parental divorce) can be compensated by other resources to ensure a successful labor market entry. However, this second pattern also suggests that firms cannot always compensate for a lack of resources. In the case of sudden resource loss through adverse life events, help from outside of the firm is often needed.

Table 3: **Configurations for the outcome successful labor market entry**

(Length of unemployment < 3 months in the first 6 years after graduation)

Configurations for Successful Labor Market Entry

	Solution				
	1	2	3	4	5
Adverse Life Event				●	●
Grit	⊗	⊗		●	⊗
Higher Education Mother	⊗	⊗	⊗	⊗	●
Good Relationship with Supervisor	●	●	●		
Financial Security		●	●		●
Friend Network	●	●	●	●	●
Consistency	0.875	0.877	0.893	0.868	0.856
Raw Coverage	0.375	0.340	0.428	0.479	0.474
Unique Coverage	0.025	0.015	0.012	0.035	0.027
Number of Cases	35	26	40	32	10

Overall Solution Consistency	**0.823**
Overall Solution Coverage	**0.632**

Notes: Black circles (●) indicate the presence of a condition. Circles with a cross-out (⊗) indicate the absence of a condition. Blank spaces indicate that it does not matter for a solution path whether a condition is present or absent. Large circles indicate a core condition which is a condition that is part of the parsimonious and intermediate conditions. Small circles indicate a peripheral condition which is a condition that is only part of the intermediate solution.

All calculations were made with the QCA package for R provided by Dușa (2018).

5. Robustness Analysis

QCA is distinctive for a causal asymmetry in which the absence of an outcome is not necessarily explained by the reverse configurations that explain the presence of the outcome (Schneider & Wagemann, 2012). In order to explore asymmetry and to exclude that some findings cast our inferences on hypotheses into doubt, we conducted a sufficiency analysis for the absence of a successful labor market entry as outcome. Despite lowering the consistency thresholds, however,

we did not find any ideal type sufficiently explaining the absence of a successful labor market entry. This finding is in line with the "Anna Karenina effect" (Klein Teeselink & Zauberman, 2023), which describes the phenomenon that there are many ways to fail. The finding is also in line with QCA research from other contexts such as the context of poverty, where the researchers argue that one reason for not finding a clear path to poverty is that no one intentionally plans to fail (Ragin & Fiss, 2017). Our finding does thus not imply that all adolescents were successful. However, the unsuccessful ones were so heterogeneous that there does not appear to be a systematic recipe for the absence of a successful labor market entry. Therefore, our analysis shows a strong asymmetry. Clear causal paths to a successful labor market entry could be identified, the reasons for the absence of a successful labor market entry remains idiosyncratic and individualized.

We also conducted several robustness tests following Schneider and Wagemann (2012) and Oana and Schneider (2021) (see Appendix C). First, in line with Schneider and Wagemann (2012), we test different thresholds for consistency and calibration decisions. Additionally, we test our frequency threshold. By increasing and decreasing both consistency and frequency, we observe no substantive changes in our results. The same applies to changing the calibration decision for the condition grit from a crossover point at 3.4 to 4.[4] Some of the original solution paths showed additional conditions. For example, solution path 4 now shows the absence of financial security instead of the absence of a higher education of the mother. Most importantly, the changes did not affect the resource compensation mechanisms we observed.

Second, following the robustness test protocol by Oana and Schneider (2021), we calculated and checked additional parameters of fit (see Appendix D). An important element of the robustness test protocol is the idea of a *robust core* (RC). We calculated test solutions, changing the consistency threshold, the calibration of one condition and changing the frequency threshold in addition to a newly calibrated condition, to intersect the test solutions with our initial solution. We find very high values, almost 1, for fit-oriented robustness parameters and high values for case-oriented robustness parameters. This means that our initial solution is again robust against the

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[4] In our main analysis, we set the crossover point at 3.4, because this value offers a more intuitive interpretation than setting the crossover point, for example, at 4 (as we did in the robustness check). A value of 3.4 represents the mean value of (a) our sample and (b) the original study on the Short Grit Scale (Duckworth & Quinn, 2009) and thus allows for analyzing people with above-average and below-average levels of grit.

changes within the test solutions. Lastly, looking at the solution path of the intersection of our initial solution with the test solution, we find the solution paths to be a subset of our initial solution. In particular, we find solution paths 1 and 5 of our initial solution to be part of the robust core. We find a slightly adjusted solution path 2 within the robust core where the education of the mother is now a present condition in the robust core. Overall, we conclude that our results are robust, and that no substantially meaningful deviations can be observed (cf. Schneider & Wagemann, 2012).

6.   Discussion

A successful transition of young graduates into the labor market is essential not only for individuals' future careers, earnings, and life satisfaction but also to tackle the major shortage of skilled workers that firms are facing around the world (e.g., Brunello & Wruuck, 2021; Möller & Umkehrer, 2015; Mroz & Savage, 2006). While a large empirical literature has studied the determinants of labor market success in terms of the effects of single determinants (e.g., Duckworth et al., 2007; Engzell et al., 2020), little is known about how different determinants interrelate and whether different determinants can complement each other, cancel each other, or compensate for the non-existence of another.

The goal of this paper was to theoretically develop and empirically test a configurational approach to study the determinants of a successful labor market entry of young middle-skilled graduates. The paper integrated conservation of resources (COR) theory (Hobfoll, 1989) with research on the determinants of labor market and career success (e.g., Caspi et al., 1998; Parker et al., 2009) to develop configurational hypotheses on how different types of resources (such as personal, human, and social capital resources) in combination with sudden resource losses are linked to a successful entry into the labor market. To test the configurational hypotheses, the paper applied fuzzy set qualitative comparative analysis (fsQCA) to a unique longitudinal dataset that merges comprehensive individual survey data of adolescents in an upper-secondary education and training program with administrative records on labor market outcomes within six years of graduation.

The findings revealed that it is not single resources but a combination of human, personal, social capital and energy resources that determine a successful labor market entry of young people. Most importantly, the results showed that even when young individuals lack personal or parental

resources, firms can offset these disadvantages by providing a positive apprentice-supervisor relationship to still ensure a successful labor market entry.

6.1   Implications for Theory and Research

Our study advances the literature on the determinants of career and labor market success and conservation of resources theory in three key ways. First, we contribute to research on the determinants of labor market and career success by integrating COR theory with the labor market and career success literature. Through integration of these theories, we build a configurational theoretical framework on resource configurations that shape a successful labor market entry. In this framework, different resources (personal, human, and social capital) can both complement and compensate one another. This framework allows for multiple paths to a successful labor market entry and thus moves beyond variable-centered perspectives that focus on only one or a few determinants at a time.

Second, we contribute to COR theory—one of the most commonly cited theories in organizational behavior and management research (Halbesleben et al., 2014)—by theorizing and empirically showing how COR theory can be tested with a configurational approach. Even though COR theory uses configurational arguments (e.g., emphasizes the interconnection of resources), researchers have predominantly tested the theory with variable-centered, regression-based approaches. We thus bridge the gap between COR theory and empirical studies by demonstrating a new approach to test key concepts of COR theory.

Third, we contribute to the literature on grit by (a) analyzing the importance of grit for success on the labor market in the context of other resources (versus analyzing grit in isolation) and (b) employing a long-term longitudinal design with the labor market outcomes being measured up to six years after graduation and up to ten years after measuring grit. Our results suggest that—in face of adverse life events—grit can indeed be helpful in promoting a successful labor market entry. However, grit was neither a single necessary condition for a successful labor market entry nor was it present in the majority of path to a successful labor market entry. In contrast, our results suggest that a lack of grit can be compensated by other resources such as work-related social capital. Taken together, these findings suggest that while grit can help in difficult situations, there are many paths to success on the labor market that do not require high levels of grit. Our findings

thus stress the importance of moving beyond the analysis of grit as a single explanatory variable and towards analyzing grit in context of an individual's other resources or lack of resources.

6.2   Practical Implications

Our research also offers several practical implications. First, our results on work-related social capital during the training period of an individual suggest that firms can play an important role in keeping young middle-skilled graduates with starting disadvantages successfully in the labor market. Specifically, a good apprentice-supervisor relationship can compensate a lack of personal and human capital resources in order to still ensure a successful labor market entry. This finding is noteworthy given the skill shortages firms around the globe are struggling with. The finding indicates that firms can play an active role in reducing such skill shortages by providing training and integrating young people with disadvantaged individual circumstances.

Second, however, our results on sudden resource losses suggest that firms cannot always compensate a lack of resources. Specifically, our results suggest that work-related social capital cannot compensate for a sudden loss of resources through adverse life events. In these cases, help from outside of the firm is needed, for example through a systematic case management as it exists in the Swiss education and labor market system, where students in difficult and complex situations are supported through a targeted system of stakeholder collaboration (e.g., social workers, the child and adult protection authority, school administration, and psychologists).

Third, our results have implications for the public discussion on how much emphasis should be placed on grit in the education system (Mehta, 2015; Mineo, 2022). Our findings suggest that grit can indeed be helpful in promoting long-term outcomes such as success in the labor market (measured up to ten years after measuring grit). However, our results also suggest that grit (a) is only one of many determinants of a successful labor market entry, and (b) is intertwined with other determinants. That is, grit can be compensated for by other resources, and grit itself can compensate for resource losses. These results imply that viewing grit as one component of resource caravans that is helpful but neither necessary nor sufficient on its own for success, may be more effective than a narrow focus on promoting and encouraging grit in isolation.

6.3 Conclusion

With firms worldwide struggling to find skilled workers, it is crucial not to lose young labor market entrants in early career stages. While previous research has predominantly focused on studying the effects of single determinants of early labor market success, we adopt a configurational approach to identify which configurations of different types of resources in combination with sudden resource losses during an upper secondary training program are linked to a successful labor market entry in the six years after graduating from such programs. Our findings suggest that (a) it is not single resources but a combination of human, personal, social capital and energy resources (i.e., what COR theory refers to as "resource caravans") that determine a successful labor market entry of young people, (b) the path to a successful labor market entry is wide, with several different resource configurations similarly producing a successful labor market entry, and (c) if young people lack stable personal and/or human capital resources, this lack can be compensated through contextual resources during training (e.g., a good apprentice-supervisor relationship) in order to still ensure a successful labor market entry. Our research points to the opportunities of using configurational approaches to uncover the complex interconnections of resources and life events that shape success on the labor market.

Appendix A. Truth Table

Table 4: Excerpt of the truth table

Adverse Life Event	Higher Education Mother	Grit	Good Relationship with Supervisor	Financial Security	Friend Network	Successful Labor Market Entry	n	Raw consist.	PRI consist.
1	0	1	0	0	1	1	7	0.934	0.809
1	0	0	1	1	1	1	9	0.916	0.830
1	0	1	1	0	1	1	5	0.910	0.800
1	0	1	0	1	1	1	6	0.907	0.780
1	0	0	1	0	1	1	9	0.906	0.783
0	0	0	1	0	1	1	8	0.904	0.765
0	0	0	1	1	1	1	8	0.903	0.792
1	1	0	0	1	1	1	5	0.897	0.764
1	1	0	1	1	1	1	5	0.896	0.797
0	1	0	1	1	1	1	4	0.889	0.772
1	0	1	1	1	1	1	13	0.889	0.793
0	0	1	1	1	1	1	10	0.881	0.763
0	0	1	1	1	0	0	4	0.910	0.703
1	0	0	0	0	1	0	4	0.909	0.731
0	0	0	0	0	1	0	10	0.904	0.694
0	1	1	1	1	0	0	3	0.903	0.694
0	0	0	0	1	0	0	5	0.900	0.474
0	0	1	0	0	1	0	7	0.895	0.666
0	1	0	1	0	1	0	4	0.892	0.741
1	0	0	0	1	1	0	10	0.886	0.731
0	0	1	1	0	1	0	8	0.886	0.737
1	1	1	0	1	1	0	3	0.881	0.726
0	1	0	0	1	1	0	5	0.878	0.731
0	0	1	0	1	1	0	10	0.875	0.710
0	1	1	0	1	1	0	8	0.874	0.722
0	0	0	0	1	1	0	12	0.871	0.704
0	1	1	1	1	1	0	6	0.866	0.740
0	0	1	0	0	0	?	1	0.958	0.613
1	1	0	0	0	0	?	1	0.957	0.686
1	0	0	0	0	0	?	1	0.956	0.635
0	0	0	0	0	0	?	1	0.952	0.548
1	0	1	1	0	0	?	2	0.939	0.705
1	0	0	0	1	0	?	1	0.937	0.661
0	0	0	1	0	0	?	1	0.926	0.632
1	0	1	1	1	0	?	2	0.924	0.739
0	1	0	0	0	1	?	2	0.918	0.718
0	1	0	0	1	0	?	1	0.918	0.622
0	0	1	1	0	0	?	2	0.917	0.630
0	0	0	1	1	0	?	2	0.915	0.686
0	1	0	1	1	0	?	2	0.914	0.701
1	1	1	0	0	1	?	1	0.913	0.747
1	1	0	0	0	1	?	1	0.909	0.736
0	1	0	0	0	0	?	0	-	-
0	1	0	1	0	0	?	0	-	-
0	1	1	0	0	0	?	0	-	-
0	1	1	0	0	1	?	0	-	-

Appendix B. XY Plots of the Sufficient Solution Paths

Sufficiency relation

Inclusion: 0.893   Coverage: 0.428   PRI: 0.800

Figure 4: Intermediate solution for solution path 1

Notes: The tilde symbol (~) indicates the absence of a condition. *Matedu* stands for *higher education mother*, *GRIT1* stands for *grit*, *NOCONFLICTB* stands for *good relationship with supervisor*, *friends* stands for *friend network*, and *LENGTH_900* stands for *successful labor market entry*.
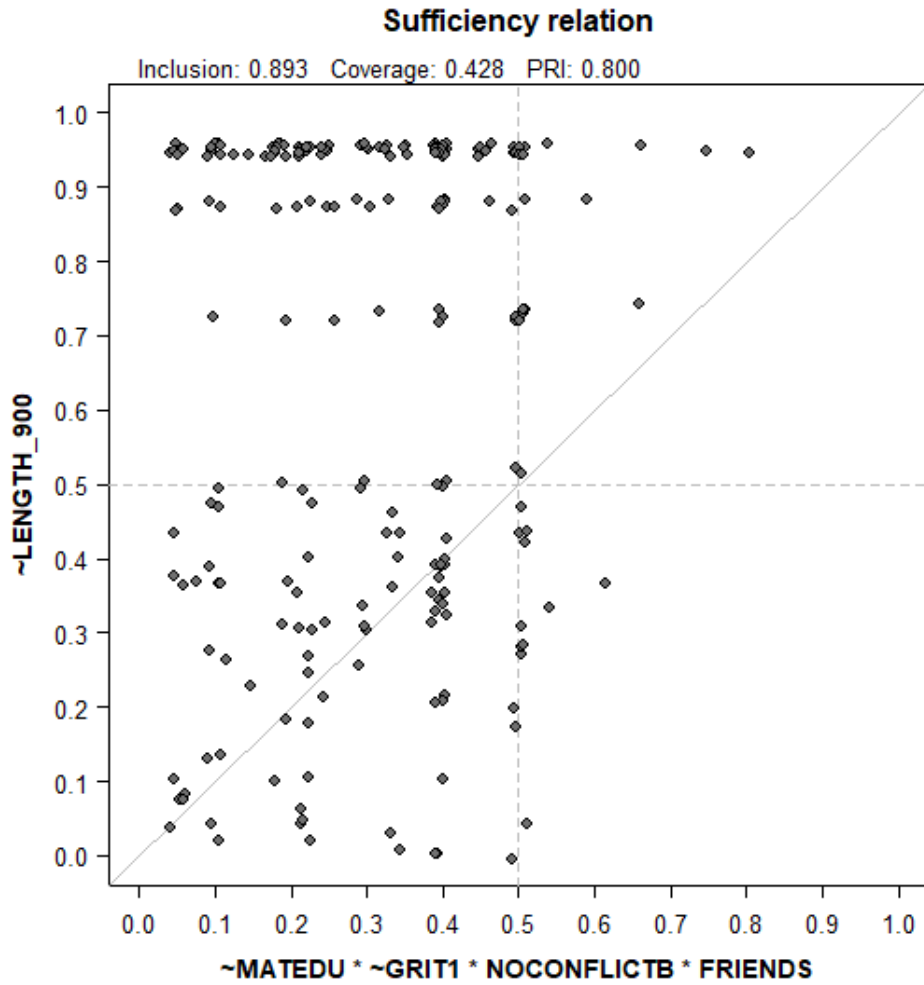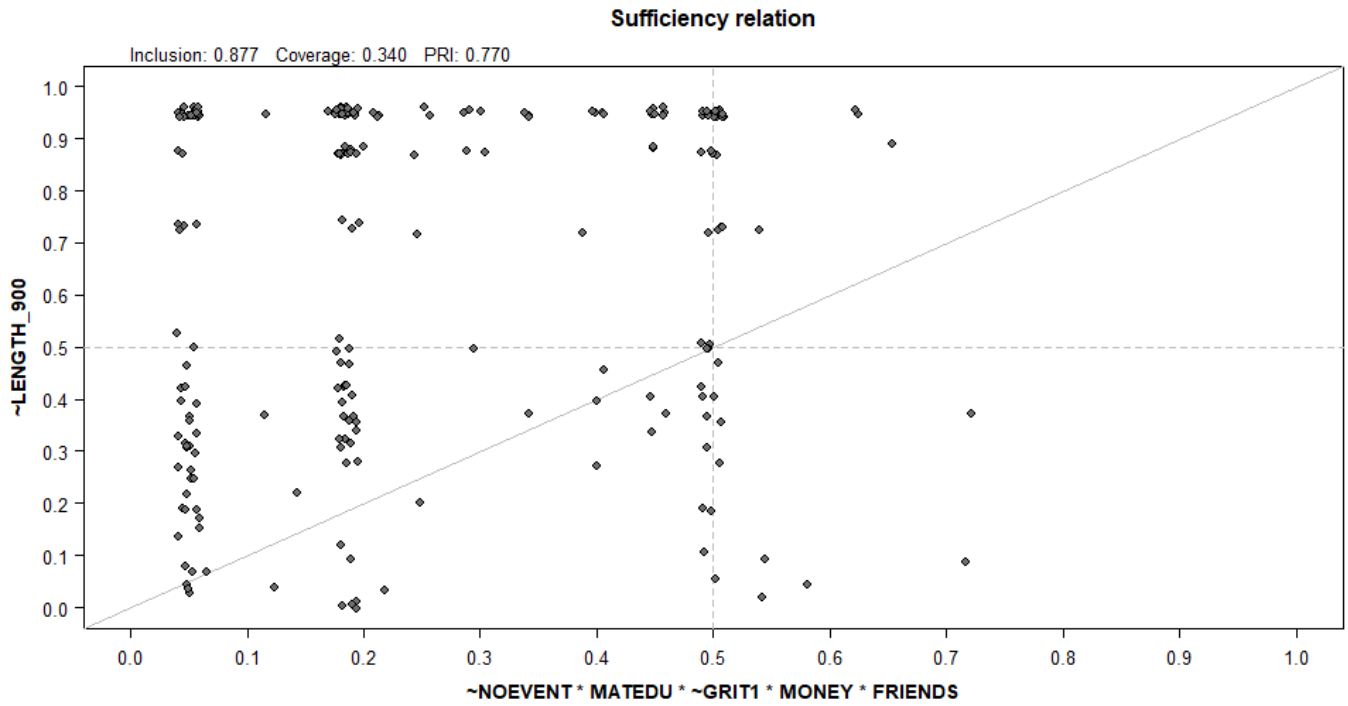
Figure 5: Intermediate solution for solution path 2

Notes: The tilde symbol (~) indicates the absence of a condition. *Matedu* stands for *higher education mother*, *GRIT1* stands for *grit*, *NOEVENT* stands for *no adverse life event*, *money* stands for *financial security*, *friends* stands for *friend network*, and *LENGTH_900* stands for *successful labor market entry*.

Figure 6: Intermediate solution for solution path 3

Notes: The tilde symbol (~) indicates the absence of a condition. *GRIT1* stands for *grit*, *NOCONFLICTB* stands for *good relationship with supervisor*, *money* stands for *financial security*, *friends* stands for *friend network*, and *LENGTH_900* stands for *successful labor market entry*.

Figure 7: Intermediate solution for solution path 4

Notes: The tilde symbol (~) indicates the absence of a condition. *EVENT* stands for *adverse life event*, *MATEDU* stands for *higher education mother*, *GRIT1* stands for *grit*, *money* stands for *financial security*, *friends* stands for *friend network*, and *LENGTH_900* stands for *successful labor market entry*.
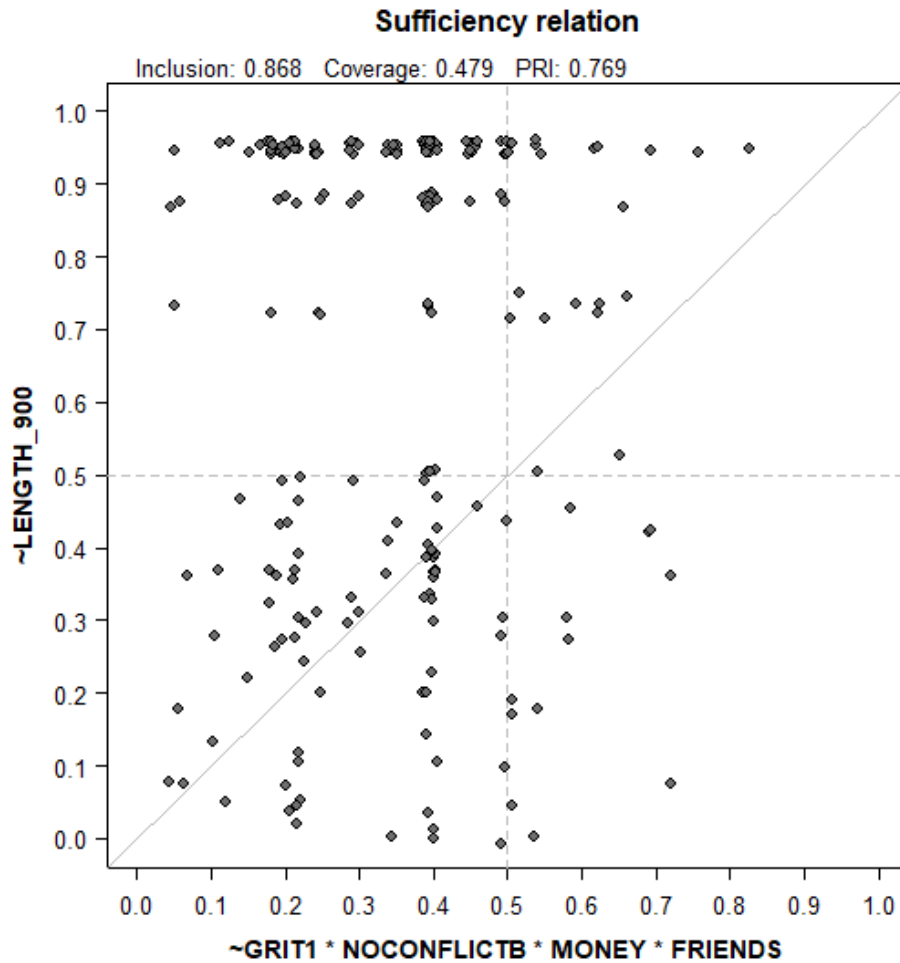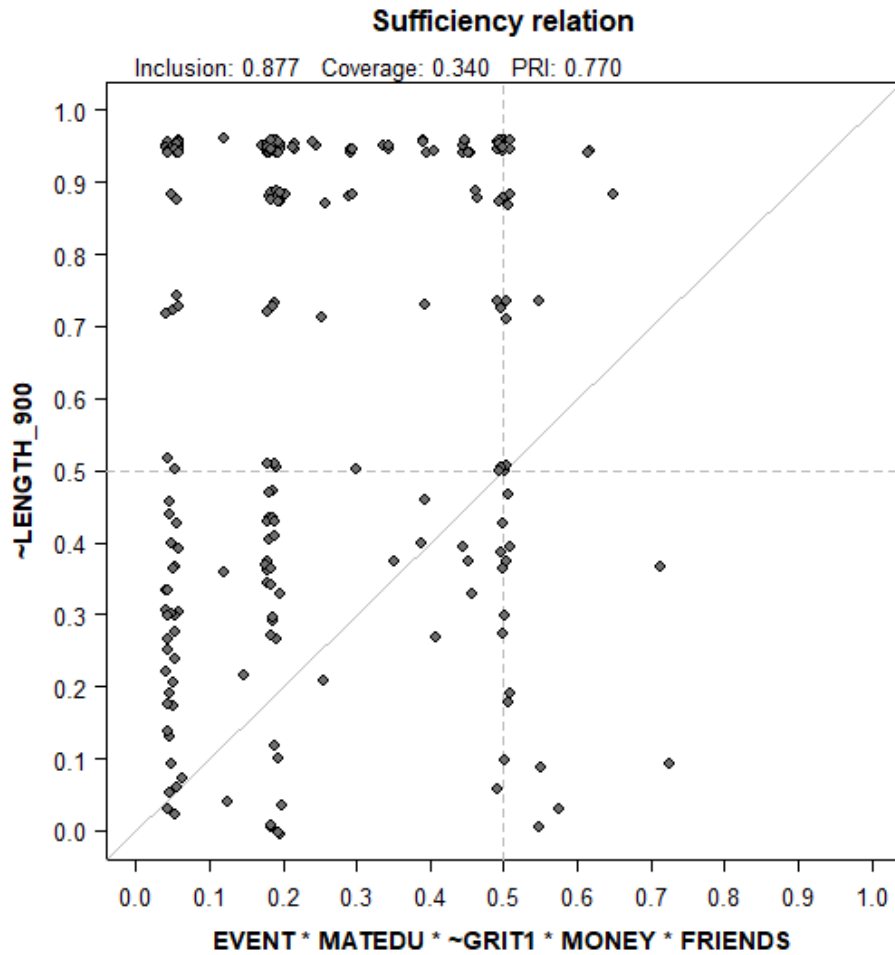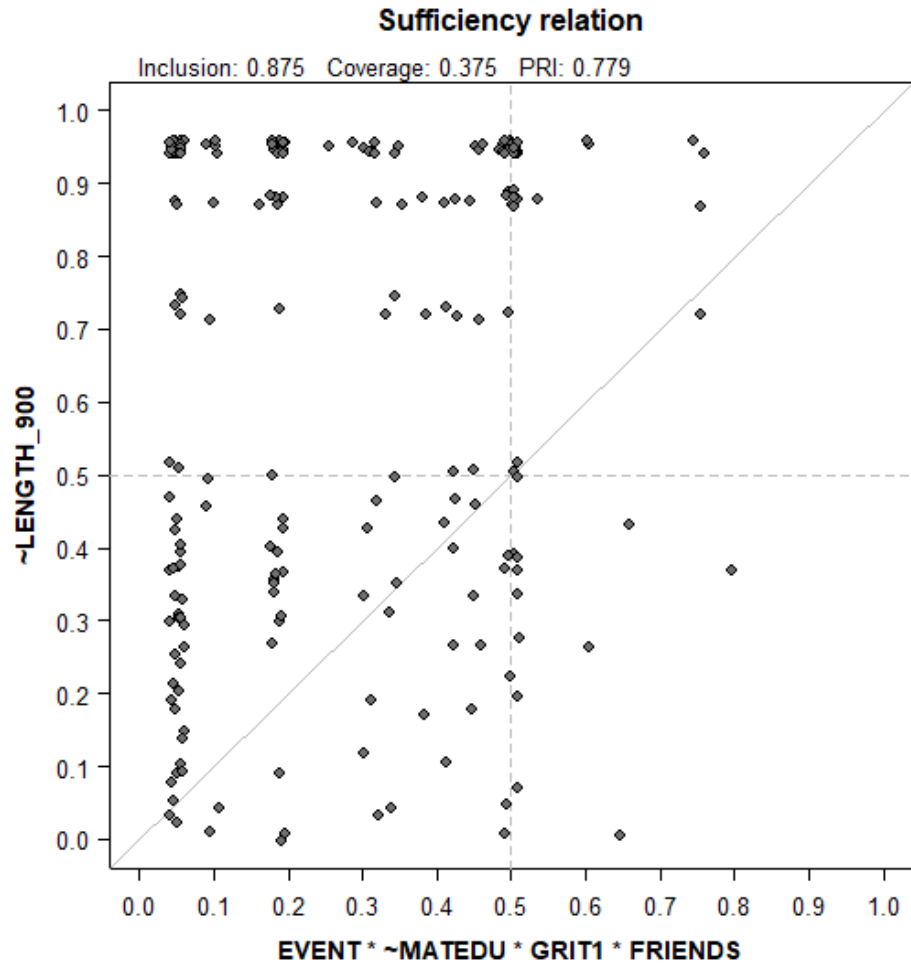
Figure 8: Intermediate solution for solution path 5

Notes: The tilde symbol (~) indicates the absence of a condition. *EVENT* stands for *adverse life event*, *MATEDU* stands for *higher education mother*, *GRIT1* stands for *grit*, *friends* stands for *friend network*, and *LENGTH_900* stands for *successful labor market entry*.

Appendix C. Robustness Checks

Table 5: Configurations for successful labor market entry, robustness 1

	Solution				
	1	**2**	**3**	**4**	**5**
Adverse Life Event				●	●
Grit	⊗	⊗		●	⊗
Higher Education Mother	⊗	⊗	⊗	⊗	●
Good Relationship with Supervisor	●	●	●		
Financial Security		●	●		•
Friend Network	•	•	●	•	•
Consistency	0.875	0.877	0.893	0.868	0.856
Raw Coverage	0.375	0.340	0.428	0.479	0.474
Unique Coverage	0.025	0.015	0.012	0.035	0.027

Overall Solution Consistency	**0.823**	
Overall Solution Coverage	**0.632**	

Notes: <u>New: Consistency threshold of 0.75</u>; PRI threshold of 0.75 and frequency threshold of 3 as in the original model. Black circles (●) indicate the presence of a condition. Circles with a cross-out (⊗) indicate the absence of a condition. Blank spaces indicate that it does not matter for a solution path whether a condition is present or absent. Large circles indicate a core condition which is a condition that is part of the parsimonious and intermediate conditions. Small circles indicate a peripheral condition which is a condition that is only part of the intermediate solution.

Table 6: Configurations for successful labor market entry, robustness 2

	Solution		
	1	**2**	**3**
Adverse Life Event	●	●	
Grit		●	⊗
Higher Education Mother		⊗	⊗
Good Relationship with Supervisor	●	⊗	●
Financial Security	⊗		●
Friend Network	•	•	•
Consistency	0.873	0.901	0.900
Raw Coverage	0.239	0.222	0.405
Unique Coverage	0.040	0.035	0.168
Overall Solution Consistency		**0.869**	
Overall Solution Coverage		**0.486**	

Notes: New: Consistency threshold of 0.90; PRI threshold of 0.75 and frequency threshold of 3 as in the original model. Black circles (●) indicate the presence of a condition. Circles with a cross-out (⊗) indicate the absence of a condition. Blank spaces indicate that it does not matter for a solution path whether a condition is present or absent. Large circles indicate a core condition which is a condition that is part of the parsimonious and intermediate conditions. Small circles indicate a peripheral condition which is a condition that is only part of the intermediate solution.

Table 7: Configurations for successful labor market entry, robustness 3

	Solution				
	1	2	3	4	5
Adverse Life Event	●	●			
Grit		●		⊗	⊗
Higher Education Mother	●		⊗	⊗	
Good Relationship with Supervisor			●	●	●
Financial Security	·		●		●
Friend Network	·	·	●	·	·
Consistency	0.843	0.837	0.856	0.893	0.868
Raw Coverage	0.395	0.443	0.474	0.428	0.479
Unique Coverage	0.022	0.040	0.027	0.012	0.035
Overall Solution Consistency	**0.801**				
Overall Solution Coverage	**0.665**				

Notes: New: Frequency threshold of 4; PRI threshold of 0.75 and consistency threshold of 0.85 as in the original model. Black circles (●) indicate the presence of a condition. Circles with a cross-out (⊗) indicate the absence of a condition. Blank spaces indicate that it does not matter for a solution path whether a condition is present or absent. Large circles indicate a core condition which is a condition that is part of the parsimonious and intermediate conditions. Small circles indicate a peripheral condition which is a condition that is only part of the intermediate solution.

Table 8: Configurations for successful labor market entry, robustness 4

	Solution				
	1	**2a**	**2b**	**3**	**4**
Adverse Life Event	●	⊗	⊗	●	
Grit		⊗	⊗	●	
Higher Education Mother		●	●		⊗
Good Relationship with Supervisor	●	•			●
Financial Security	•		•	⊗	●
Friend Network	•	•	•	•	●
Consistency	0.837	0.902	0.882	0.870	0.856
Raw Coverage	0.424	0.292	0.299	0.251	0.474
Unique Coverage	0.056	0.007	0.012	0.027	0.050

Overall Solution Consistency	**0.810**
Overall Solution Coverage	**0.627**

Notes: New: change in calibration of condition *Grit (e=1, c=3.9, i=5)*; PRI threshold of 0.75 and consistency threshold of 0.85 as in the original model. Black circles (●) indicate the presence of a condition. Circles with a cross-out (⊗) indicate the absence of a condition. Blank spaces indicate that it does not matter for a solution path whether a condition is present or absent. Large circles indicate a core condition which is a condition that is part of the parsimonious and intermediate conditions. Small circles indicate a peripheral condition which is a condition that is only part of the intermediate solution.

Appendix D. Robustness Test Protocol (Oana & Schneider, 2021)

Table 9: Robustness test protocol

			Successful Labor Market Entry	
			Sensitivity Ranges	
	Condition	0	0.5	1
Calibration anchors	Adverse Life Event	Lower: NA Upper: 2.4	Lower: 3.1 Upper: 3.4	Lower: 4.2 Upper: 5.6
	Higher Education Mother	Lower: -1 Upper: 2	Lower: 3.1 Upper: 3.1	Lower: 5 Upper: NA
	Grit	Lower: NA Upper: 2.5	Lower: 3.3 Upper: 3.4	Lower: 4.3 Upper: 6.3
	Good Relationship with Supervisor	Lower: -1.1 Upper: 2	Lower: 4.2 Upper: 4.8	Lower: 4.5 Upper: 5.1
	Financial Security	Lower: NA Upper: NA	Lower: 3 Upper: 3	Lower: 4.5 Upper: NA
	Friend Network	Lower: NA Upper: NA	Lower: 1 Upper: 1.2	Lower: NA Upper: NA
Parameters	Raw consistency	Lower: NA	Threshold: 0.85	Upper: 0.85
	Frequency	Lower: 2.1	Threshold: 3	Upper: 3
			Robustness parameters	

Fit oriented	RF_{cons}: 0.989	RF_{cov}: 0.979	RF_{SC_minTS}: 0.969	RF_{SC_maxTS}: 0.956
Case oriented	RCR_{typ}: 0.792	RCR_{dev}: 0.821	RCC_Rank: 2	

Table 10: Solution path of robust core (RC)

		Solution	
Adverse Life Event		●	
Grit	⊗	⊗	⊗
Higher Education Mother	⊗	●	●
Good Relationship with Supervisor	●		●
Financial Security		●	●
Friend Network	●	●	●

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