19. ‘Explaining educational differentials’ revisited: an evaluation of rigorous theoretical foundations and empirical findings*

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1. INTRODUCTION

Educational differentials are an evident characteristic of modern societies (Blossfeld et al. 2016; Jackson 2013; Breen et al. 2009, 2010; Shavit et al. 2007). On the one hand, there is an unequal distribution of educational attainment in the population. On the other, individual opportunities in education can be predicted by characteristics such as social origin, gender or migration background (Erikson 2019; Kriesi & Imdorf 2019; Nauck 2019). In the long tradition of sociological research, it is well-documented that access to continued and higher education is different for social classes in spite of compulsory mass education, educational reforms and educational expansion (Breen & Jonsson 2005). On the basis of evidence, it is concluded that educational expansion resulted in increased educational opportunities for each of these social classes, but not in an overall decline of the inequality of educational opportunity (IEO) (Erikson 2019; Hadjar 2019). In each of the countries with a class structure and a more or less stratified and selective educational system, IEO across social classes – i.e. ‘the differences in level of educational attainment according to social background’ (Boudon 1974, p. xi) – is still witnessed (Dollmann 2019). Education is a significant mechanism behind the reproduction of social inequalities across generations and throughout the life course (Blossfeld et al. 2019; Müller & Jacob 2008; DiPrete & Eirich 2006).

According to this evidence on IEO, offspring from higher social classes are more likely to have access to higher education and the opportunity to attain a university degree than working-class children. This is observed even in the cases where working-class children show the same school performance and achievements as service class children. In this respect, due to the significant value of education for individuals and societal orders, IEO is one of the urgent social issues of the twenty-first century. From the viewpoint of sociological science, therefore, two questions arise: how do we explain the persistence and change of these class-related educational differentials? How is this phenomenon to be explained completely in a way that leaves no open questions on the emergence and reproduction of IEO?

Over the past 25 years, in order to answer these questions, there have been increasing efforts towards a substantial rethink of the sociological explanation of the intergenerational reproduction of IEO (Erikson 2019; Stocké 2019; Esser 1999; Breen & Goldthorpe

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1997; Erikson & Jonsson 1996). Drawing on theory suggested by Boudon (1974), Breen & Goldthorpe (1997) published a seminal article entitled ‘Explaining educational differentials: Towards a formal rational action theory’ (see the showcase-chapter by Breen & Goldthorpe in this Handbook). Their contribution provides a sociological explanation of IEO based on the idea that, although there is no macro theory on IEO, educational differentials observed at the macro-level are an aggregated result of an individual’s educational behavior taking place at the micro-level (Figure 19.1). Educational behavior depends on the opportunities and constraints related to both the social stratification (macro-level) and the educational system (meso-level). In other words, IEO is mainly the unintended consequence of an individual’s school performance and educational decisions, which differ based on social class, across their educational careers.

In order to explain these educational differentials, Breen & Goldthorpe (1997) make use of a rigorous formal mathematical model and apply a wide version of the rational action theory (RAT), such as a sophisticated theory of subjective expected utility (SEU) (Stocké 2019; see the chapter by Diekmann on rational choice sociology). This is used to reconstruct the process of sequential educational decisions at different branching points in the educational system. At each branching point, Breen & Goldthorpe (1997, p. 282) distinguish between two options: leaving or staying on in the educational system. They offer three consequences of this educational decision: (1) leaving the educational system and entering the labor market; (2) continuing in the educational system and attaining educational success; and (3) staying on in the educational system and failing. Three

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**Figure 19.1** Micro–macro model for the explanation of IEO

Social change of
- Social stratification
- Economic conditions
- Educational policies
- Population dynamics

Social change of
- Educational opportunities
- Educational outcomes
- Educational trajectories
- Educational attainment

Educational system
- (Opportunities and constraints)
- Supply of education and credentials
- Qualification and selection

Individual preferences & family resources

Process of decision
- (Educational choice)

Rational action
factors are decisive for an individual’s decision: the cost of continuing in the educational system, the subjective probability of educational success and the expected benefit from the consequences of each of the three educational decisions. Successfully continued education increases the likelihood of being allocated to the upper social class, compared with failure or leaving the educational system early. Failure after a decision to continue education is more likely to result in allocation to a lower social class than leaving the educational system: that is, continued education at a higher level in the educational system is related to the risk of failing and being allocated to a lower social class. An early departure from the educational system is more likely to lead to entering the middle class than to allocation to the upper class. Successful attainment of a higher educational degree increases the likelihood of becoming a member of the upper class. In contrast to the lower social classes, the salariat provide privileged initial conditions for investing in their children’s education. On the one hand, the offspring of the salariat yield better achievements than working class children. On the other hand, the salariat possesses more financial resources, which are relevant to their decision on their children’s education.

This RAT comprises three mechanisms explaining these educational decisions differently for social classes. First, the likelihood of realizing ambitious educational attainments is constrained by the impact of social origin on school performance, to the disadvantage of lower-class children (primary effect of social origin) (see the chapter by Jæger on cultural capital and educational inequality). Due to the favorable social context of unfolding genetic and socio-cultural dispositions, children from the salariat have a higher likelihood of being successful in the educational system than children from the working and lower classes (Boudon 1974, p. 29). Therefore, the subjective expected probability of success in continued or higher education is higher for socially privileged groups than for working class children. Thus, lower-class children are more likely leaving the educational system than children from the higher social classes.

Second, relative risk aversion (RRA) – that is, family interest in avoiding social demotion across generations – is the core goal regarding investment in the successful educational attainment of their offspring (Breen & Goldthorpe 1997; Goldthorpe 1996, p. 494). RRA is identical for all families regardless of social class. It means that families strive for an education that will pave the way for their children’s access to a class position (and related life conditions) that is at least equal to that of their parents. Theoretically, this motive is associated with the prospect theory of Kahneman & Tversky (1979), which stresses that the pain of losing is much higher than any pleasure from gaining. Therefore, families and their children are more willing to take risks to avoid a status demotion for their children than to strive for intergenerational upward mobility (Breen & Goldthorpe 1997, p. 292). This is even true in the case of identical expectations of educational success, as well as in the case of costless education. Furthermore, in accordance with status position theory (Keller & Zavalloni 1964, p. 60; Boudon 1974, p. 29), the same educational decision results in status demotion for one social class, while it reproduces the class position for the other classes. Thus, not all families have to aim for the highest educational attainment in order to avoid status demotion. Against the background of the status maintenance motive and their class position in the social stratification, working-class families need to choose lower or intermediate educational degrees to avoid social demotion; in contrast, for intergenerational reproduction of the class position, the offspring of the salariat have to attain high educational degrees (Breen & Goldthorpe 1997, p. 283; Goldthorpe 1996, p. 494). The
motive for status maintenance is the driving force resulting in class-specific educational decisions. In contrast to the approaches taken by Erikson & Jonsson (1996) or by Esser (1999), in which this factor is one among others, RRA forms the core of the Breen–Goldthorpe (BG) model for the explanation of education differentials.

Third, provided that lower-class families strive for the same ambitious education as the salariat, the former have to achieve more to promote their ambitions. They are regularly more likely to be handicapped by their limited resources when they want to overcome the relative long social distances to reach the areas of higher education. Controlling for initial achievement, school performance and expected probability of success, class-related cost sensitivity also results in educational differentials across social classes.

Overall, in line with Boudon (1974), Breen & Goldthorpe (1997, p. 277) seek to explain persistent class differentials in educational attainment by emphasizing the secondary effects of inequality – i.e. the impact of class position (including the resources and motives for investment in the education of offspring) on educational decision net of the achievement (Goldthorpe 1996, p. 491). Employing a rigorous RAT, Breen & Goldthorpe (1997) identify conditions and circumstances under which this mechanism of risk aversion and related educational choice at the individual level results in persistent social class differences in educational opportunities and attainments at the aggregate level (Goldthorpe 1996, p. 495). Cultural differences are not necessary to explain inequality (Breen & Goldthorpe 1997, p. 238; for another view see Van de Werfhorst & Hofstede 2007). In particular, RRA is used to explain persistence in educational inequality across birth cohorts in the context of educational expansion. In their initial article, Breen & Goldthorpe (1997) conclude that a family’s cost-benefit calculations have changed in favor of higher education across birth cohorts and historical periods due to the declining cost of higher education. In particular, the decrease of relative costs of education has resulted in the increased enrolment of working class children in continued and higher education. Because the relation between the costs and benefits of education evaluated by parents from different social classes has remained relatively constant within each of the social classes – that is, the class-specific relationship between the primary and secondary effects of social origin has not changed in spite of a gradual upgrading of educational achievements within the population – there is continuity in the social structure of educational differences (Goldthorpe 1996, p. 492).

Since the contribution by Breen & Goldthorpe (1997) – and in addition to other seminal theoretical contributions by Boudon (1974), Erikson & Jonsson (1996) and Esser (1999) – sociological research on IEO in an era of educational expansion has intensified (Becker, R. 2019; Erikson 2019). Indeed, the BG model has significantly stimulated research on IEO (Stocké 2019; Kroneberg & Kalter 2012; Breen & Jonsson 2005). Numerous studies have applied the BG model to different issues in the sociological research on educational inequalities, such as choice of school tracks (Stocké 2007; Becker 2003; Davies et al. 2002) or choice of educational level (Hällsten 2017; Tolsma et al. 2010; Becker & Hecken 2009a, 2009b). Other issues are the choice of educational attainment (e.g. Breen & Yaish 2006), the choice of field (Gabay-Egozi et al. 2010; Jonsson 1999) and changes in educational trajectories across periods and countries (Becker & Mayer 2019; Erikson 2019; Breen et al. 2009, 2010).

The aim of this chapter is to evaluate the theoretical foundation laid by the BG model and to evaluate the empirical research it has initiated. The chapter seeks to continue the
first review (Goldthorpe 2007) of the critical reception of the BG model and the body of empirical research that has been carried out using it. The chapter briefly discusses the conceptual clarity and analytical rigor of the BG model. Against the background of the state of the art in the sociology of education and research into social stratification, the chapter investigates whether the model provides a mechanism-based explanation that can usefully explain phenomena at the level of social systems as well as at the level of individual behavior, and whether it can help understand how social system level and individual behavior are related (e.g. Hedström & Swedberg 1998; Sørensen 1998). Furthermore, the chapter analyses whether the BG model could be extended by additional arguments or enriched by the integration of other theories. Overall, the theoretical foundation, criticisms and extensions of the BG model are discussed in this chapter. It will also evaluate whether the BG model comprises testable implications that have resulted in appraisals of sociological explanations of persistent or changing educational differences, as well as whether these implications have resulted in the progress of empirical tests and applications of this model. In sum, the application of this model in empirical research is discussed by considering different methodological problems and findings.

2. THEORETICAL ASPECTS

2.1 The BG Model in a Comparative Theoretical Test

For a complete and exhaustive explanation of a sociological phenomenon for the persistent educational differences related to social class, it is necessary to obtain an empirically substantial and mathematically rigorous theory (Esser 1999; Boudon 1998; Hedström & Swedberg 1998; Sørensen 1998). Regarding the core features of rigorous sociology (cf. the chapter by Raub, De Graaf & Gërxhani on rigorous sociology), does the BG model on the formation and reproduction of IEO provide a ‘true’ (falsifiable and empirically adequate), informative and consistent theory – i.e. one that is mechanism-based, probabilistic and entails a causal explanation with a wide theoretical range? There are several ways to answer this question. One can formally prove that RRA suffices to explain the persistence of class-based educational differences, as has already been done by Breen & Goldthorpe (1997) (see also Goldthorpe 1996, 2007). Another option is a comparative theoretical test. Lucas (2009) provides such a comparison of theories seeking to explain educational differences, such as the BG model (with an emphasis on RRA), the maximally maintained inequality theory (MMI) proposed by Raftery & Hout (1993) and the effectively maintained inequality theory (EMI) proposed by Lucas (2001).

In comparing these theories, Lucas (2009, p. 476) concludes that Breen & Goldthorpe (1997) ‘propose a theory of RRA to explain stable class differentials across cohorts, declining class effects across transitions, and rapidly changing gender effects’, and that among the three perspectives, the theory of RRA is expressed most precisely (Lucas 2009, p. 461). Breen & Goldthorpe (1997) developed a scientific theory with RRA as a falsifiable core, and analysts may usefully study the degree to which the theory matches empirical reality. On the one hand, RRA theory is a collection of several separable components, such as primary and secondary effects at the individual level (Boudon 1974), as well as status position theory and inequality of resources at the structural level (Keller &
Zavalloni 1964). On the other hand, RRA is able to explain cases that are consistent with MMI (permanent investment in education) and EMI (investment in education in order to establish social distinction), while only the theoretical approaches – RRA and EMI – are falsifiable (Lucas 2009, p. 505). Overall, it is an empirical question whether the logically plausible prediction of RRA theory is true: that educational expansion might not be the most efficient way to reduce the effects of social background on educational differences (in contrast, EMI theory argues the opposite effect of educational expansion).

Such comparative theoretical tests are necessary to evaluate the different theories regarding their substance, scope, empirical testing and capacity to solve scientific problems. Overall, there is still a lack of comparative theoretical tests comparing the different RATs on educational differentials. Adoption of the approach taken by Boudon (1974) in research on educational differentials has contributed to the understanding of this social phenomenon. To some degree, this approach shares the theoretical foundation of the human capital approach (Becker 1975) that the benefits, costs and probability of success are the main parameters in the process of decision-making on education. However, in contrast with this economic model, the sociological approaches suggested by Erikson & Jonsson (1996), Breen & Goldthorpe (1997) or Esser (1999) consider typical variations in these parameters across social classes, allowing for the explanation of IEO. Boudon (1974) in particular considers an individual’s position in the hierarchy of the class structure and the class-related benefits of human capital investment. In contrast to the human capital approach, which assumes constant costs and benefits of education for each individual, the sociological RAT shares the common view that individuals evaluate the subjective expected costs and benefits depending on their position in the social stratification. Therefore, the educational decisions based on the subjective calculation of these parameters vary significantly across social classes. There are similarities within the several sociological approaches, but also differences regarding the weight of the primary effect of social stratification and the parameters of the educational decision. Compared with the approaches taken by Erikson & Jonsson (1996) or Esser (1999), the BG model stresses the significance of RRA and its impact on the consequences of educational decisions. In contrast to the BG model, status maintenance involves one expected benefit among other benefits such as income or social recognition. If one takes the empirical results achieved by these approaches into account, there are minor differences. This is at least partially confirmed by an empirical comparison of the approaches taken by Erikson & Jonsson (1996) and by Esser (1999) (see Becker 2000).

2.2 Extending the BG Model

There have been other efforts to modify and extend the BG model in order to improve the mechanism-based explanation. For example, Hillmert & Jacob (2003) include the role of more than two educational options at late branching points in the German differentiated educational system, which offers an alternative at an intermediate level, such as vocational education and training (VET) – in particular in the so-called dual system of (mainly firm-based) vocational training (e.g. labor market entry versus university versus VET versus sequence of VET first and university training after that). They also include the role of an individual’s subjective expectations of success for different educational choices and time-discounting preferences (time horizons) regarding educational choices.
In the case of the stratified German educational system, where different parallel educational tracks lead to different hierarchically ordered educational degrees, they demonstrate educational decisions beyond the general school system that individuals are indeed forward looking, subjectively rational and utility-maximizing agents. They plan their educational trajectory by considering the resources they have available for durable investment in education and training, the subjective expectations of success for different pathways in the educational system, and the related subjectively perceived time horizon for accumulating the expected income up to a later point in time (see also Breen et al. 2014; Jæger & Holm 2012; Gabay-Egozi et al. 2010; Tolsma et al. 2010; Holm & Jæger 2008). In this respect, class-related educational disparities could additionally be explained by class differences in terms of time preferences (the duration of educational trajectory and the postponement of a return to education and training), expectations of success for different educational pathways (including insurance strategies, such as the sequential combination of VET and university training regarding avoiding status demotion) and resources for financing short- or long-lasting education and training (Becker & Hecken 2009b).

This argument has been adopted by Breen et al. (2014, p. 258), considering time-discounting preferences. It is obvious that students with a low time-discount rate are particularly likely to enter the academic track. RRA deters students from choosing the academically challenging but economically rewarding academic track in secondary education, while students from advantaged socioeconomic backgrounds are not affected by risk aversion when making educational decisions (Breen et al. 2014, p. 258; see also Esser 1999, p. 274). Another difference between the economic and sociological RATs dealing with actor rationality becomes obvious. In contrast to the economic version of strict rationality, the sociological RAT considers bounded rationality (Simon 1959) and uncertainty on the benefits expected in future (Breen et al. 2014, p. 261). When the expected consequences of an educational decision are set in a remote future, it is assumed that individuals might have serious problems in calculating the benefits accurately. It is obvious that individuals from the working class – i.e. families with a low income – have a relative limited time horizon. The costs of higher education, which are due immediately, might be more significant to them than the uncertain returns they might realize in the remote future. Owing to their limited time horizon, besides their substandard school achievement and rather low probability of success in university training, working class children are more likely to be diverted from higher education (Becker & Hecken 2009b). In sum, this class-related mechanism also contributes to IEO at the aggregate level.

Another extension of the BG model has recently been developed by Tutić (2017). He suggests considering ‘hedging’ as an additional individual strategy of educational choices based on RRA. The starting point for this extension is the empirical evidence collected by Stocké (2007) and Gabay-Egozi et al. (2010) to show that, contrary to the initial claim by Breen & Goldthorpe (1997), RRA does vary by social class when directly measured. In particular, Gabay-Egozi et al. (2010) argue that modeling educational decisions as a binary choice between high and low educational pathways does not consider that lower-class families tend to choose a middle way between two extremes (Tutić 2017, p. 391). Tutić (2017) includes hedging as an additional mechanism for non-binary educational decisions in the BG model in order to formulate a more realistic explanation of educational disparities by considering intermediate options – such as insurance options (e.g.
first VET then university training in the German case, or first the Federal Vocational Baccalaureate then choosing a field of study in a university of applied science training in the Swiss case) – as well as extreme options, such as staying in the educational system or leaving the educational system. It is predicted that ‘hedging’ is rather more attractive for lower-class children than for individuals from the upper social classes. This implies that the core assumption of the BG model has to be revised due to empirical findings, since the degree of status maintenance is not the same for each social class. In sum, the theoretical extension by Gabay-Egozi et al. (2010), as well as its formalization by Tutić (2017), corresponds with the theoretical model suggested by Hillmert & Jacob (2003). Without losing explanatory power, the RRA argument has not been falsified; rather, it has been relaxed due to contrary empirical evidence (Tutić 2017, p. 405). According to Tutić (2017, p. 406), RRA is sufficient but not necessary for a ‘relaxed version of relative risk aversion’ contributing to an explanation of educational difference. However, this strong claim is a hypothesis that needs to be tested carefully in the future. It has to be considered that, while theoretical problems could be partially responsible for contrary empirical findings concerning the RRA paradigm, problems in measuring RRA and specification errors in model estimations could be another source of contradictory results (see Stocké 2007).

2.3 Explanation of Primary Effect Using Rational Choice Theory and RRA

Like Boudon (1974), Breen & Goldthorpe (1997) stress that it is the secondary effect rather than the primary effect – the relation of social origin and children’s achievement in education and training – that contributes to the explanation of educational differences, as well as to the persistent IEO in the course of educational expansion. This claim is indeed confirmed by several empirical tests carried out (just to name a few examples) by Becker (2003, 2009), Breen & Yaish (2006) and Karlson (2013). However, this claim has been criticized by Nash (2003), as RAT in general and RRA theory in particular do not account for the explanation of primary effects (see also the chapter by Jæger). From his perspective, RAT is therefore incomplete in terms of explaining IEO. However, this conclusion is premature because the BG model integrates consequences of class-related academic abilities systematically into the decision-theoretical framework (Stocké 2007, p. 506). These consequences are, meanwhile, often confirmed in many empirical studies employing RAT (Erikson 2019).

One could further argue that primary effects are necessary but not sufficient for explaining educational differentials (Goldthorpe 1996). Of course, the relation between social origin, individual talents and school performances are known, but not investigated in detail from a sociological view (Jæger & Breen 2016; Stocké 2007). In particular, the consequences of the mechanisms of the intergenerational transmission of social and cultural capital for school performance are still obscure. However, besides the social learning theory proposed by Bandura (1969), which provides an explanation for the primary effect in the logic of RAT, there are efforts to explain the primary effects of social origin (Zangger & Becker 2019). They are ignored by Nash (2003). A number of empirical studies on the families’ early investment into the children’s education as a rational action contribute to the understanding of this phenomenon (e.g. Becker, B. 2019). In the tradition of the BG model, Cardona & Diewald (2014) have developed a RAT in order to
explain the primary effect through a systematic combination of an RRA mechanism and a mechanism of cumulative advantage (cumulative processes of skill growth in a favorable learning context), which differ by social class. In order to avoid downward mobility, upper-class families are more likely to share time and effort with their children regarding investing in their development via cognitively stimulating activities, in contrast to families in intermediate and low social positions. These upper-class families are more likely to use institutionalized preschool opportunities, such as day nurseries and kindergartens, which results in their children’s comparative competitive advantage at and after school enrolment. In sum, the instrumental side of parenting reflects the efforts upper- and middle-class parents consciously make to secure an advantage for their children in the educational system in order to avoid their children’s social demotion across their life course. The empirical analysis by Cardona & Diewald (2014, p. 24) confirms that class-specific investment in children’s cognitive and social development is consistent with social mechanisms, such as RRA and cumulative advantage. In particular, the investment of upper-class families in their children’s development is insensitive to their children’s skills, in contrast to the investment made by families in other social positions. The authors conclude that ‘parental investments are driven more by class-specific motives and cultural resources than simply by composition effects in terms of material resources, which tend to correlate with social class’ (Cardona & Diewald 2014, p. 25). The conclusion drawn by Van de Werfhorst & Hofstede (2007, p. 391), however – that primary effects are ‘manifested through cultural capital and not through RRA (in addition to other potential sources of class variations such as genetics)’ – appears doubtful in the face of the findings of Cardona & Diewald (2014).

3. EMPIRICAL TESTS AND APPLICATIONS

A number of previous tests and applications of RRA theory have provided different degrees of support (e.g. Jæger & Holm 2012; Gabay-Egozi et al. 2010; Breen & Yaish 2006). Holm & Jæger (2008), for example, distinguish between three groups of empirical tests. The first group comprises studies that test parts of RRA theory (e.g. Stocké 2007; Van de Werfhorst & Hofstede 2007; Becker 2003). The second group includes studies that test ‘reduced-form’ versions of RRA theory (e.g. Davies et al. 2002; Need & de Jong 2001). The third group considers studies that test RRA theory in its structural form (e.g. Breen & Yaish 2006). Holm & Jæger (2008, p. 203) conclude that some core assumptions of RRA theory have so far not been tested. In their view, Breen & Yaish (2006) frame RRA theory completely in its structural form; however, due to limitations in their data, they are not able to test explicitly if education is chosen in a utility-maximizing way, or if RRA behavior explains educational decision-making completely. Van de Werfhorst (2009, p. 271) also stresses that Breen & Yaish (2006) provide the most precise direct empirical test by revealing class differences through the impact of the expected probability of success on realizing educational transitions (see also Holm & Jæger 2008, p. 203). In line with RRA theory, it is obviously the case that children with lower social origins require a higher probability of success in order to make a transition, compared with children with higher origins. In a more recent article, Jæger & Holm (2012) confirm this conclusion again.
3.1 Indirect and Direct Test Strategies

Nevertheless, the most important aspect to be considered for an empirical test of RAT concerns the question of whether it provides an indirect or a direct test strategy (Kroneberg & Kalter 2012; Brüderl 2004). An indirect test strategy is characterized by a procedure in which the RAT itself is not tested directly, but only its logical derivations. An example is the empirical test of a hypothesis on an individual’s rational action, which is deduced to be logical from that individual’s theoretically assumed preferences, beliefs and expectations, as well as from the effect of their resources and social contexts. While their resources and social embeddedness (e.g. class position, education and status) are actually observed, this is not true for their preferences, beliefs and expectations, nor is it true for the process of evaluation of alternatives and the selection of an option as proposed by RAT (see the chapter by Diekmann). However, since the core elements of the utility function claimed by RAT in general, and by RRA theory in particular, are not measured, these theories cannot be falsified; only their deductions can. Since it is possible to deduce objectively true assumptions from a false theory, it is not possible to evaluate the truth content of the BG model in this way. Thus, such an indirect test strategy – the so-called revealed-preference analysis (Jæger 2007, p. 458) – is not useful for testing whether the theory has any substance, to obtain indications of whether the inferences on preferences are empirically valid, or for determining whether inferences based on incorrect expectations assumptions are wrong (Blossfeld 1998, p. 44). Examples of an indirect test of the BG model have been provided by Jonsson (1999), Need & De Jong (2001), Davies et al. (2002), Morgan (2005), Van de Werfhorst & Andersen (2005), Breen & Yaish (2006), Jæger (2007), Holm & Breen (2016) and Hällsten (2017).

The direct test strategy is characterized by the manifest measurement of theoretical parameters – that is, the direct measure of preferences, desires, beliefs, expectations and perceptions, such as aspirations, benefits, costs, the probability of success and the status maintenance motive (e.g. Becker & Glauser 2018; Gabay-Egozi et al. 2010; Stocké 2007; Becker 2003; and, partially at least, Van de Werfhorst & Hofstede 2007). This approach seeks to overcome the problems of revealed-preference assumptions that do not rely on explicit information about an individual’s subjective beliefs, expectations and preferences. However, these subject parameters, including RRA, are the core element of RAT, explaining an individual’s decisions and actions. They have to be considered in empirical analysis as a direct measure. Furthermore, the measure of subjective expected costs and benefits (particularly RRA) and the probability of success is very different in the empirical studies. In particular, Stocké (2007), who has provided the most convincing direct test strategy so far, has discussed intensively the problem of measuring an individual’s motive regarding maintenance of status (see also: Gabay-Egozi et al. 2010). Aside from these issues, the methodological advantage of this test strategy lies in the direct empirical test of a RAT (Brüderl 2004, p. 167). In order to overcome the identification problem (Blossfeld 1998; Manski 1995), some efforts are necessary to obtain a valid and reliable direct measure of rational expectation predictions regarding an individual’s future behavior (Manski 1995, p. 236). As outlined by Blossfeld (1998, p. 43), social scientists face the most challenging identification problem in distinguishing between the objective and subjective determinants of human behavior. This problem lies behind the difference between social and natural sciences, where the units of analysis are not thought of as
possessing ‘free will’. In terms of rigorous sociology (see the chapter by Raub, De Graaf & Gërxhani), it is obvious that there is a ‘need to explicate the identifying assumptions under which claims of rational behavior are made in empirical studies (Manski 1995)’ (Jæger 2007, p. 475).

Finally, it has to be stressed that a number of empirical tests of the BG model suffer from problems relating to their cross-sectional design. Employing cross-sectional data is not really helpful for testing the BG model and its derivatives, since this type of data does not catch the process of educational choice and related rational action. Additionally, the fact that utility-maximizing individuals are ‘forward looking agents whose educational decisions serve future as well as immediate goals’ cannot actually be considered in a cross-sectional design (Jæger & Holm 2012, p. 222). Since educational choice is a process taking place over time, there is a need for prospective longitudinal data. Panel data allows for causal analysis when the causes of an educational choice – such as class-related preferences, beliefs and expectations – and the stages of that educational choice – the perception, evaluation and selection of options – are measured previous to the actual choice and action (see e.g. Stocké 2007; see the chapters by Breen on causal inference). If one checks the applications and tests that have taken place since 1997, it is somewhat disappointing that longitudinal analyses of the BG model and other RAT applications are still rare (for exceptions, see e.g. Becker & Glauser 2018; Stocké 2007; Becker 2003; see the chapter by Gangl on longitudinal designs). In the future, there is a need to capture an individual’s entire educational trajectory by observing directly the theoretically assumed mechanisms at each branching point in the educational system. By applying panel data, including the necessary measures of constant or changing parameters and mechanisms, it would be possible to get an adequate empirical test of RAT on educational choice. Such a design provides the opportunity to take each of the decisions in the previous educational career into account when one is interested in analyzing how and why individuals survive in the educational system from enrolment up to their dropping out or attaining the highest degree. If one has no access to such demanding panel data, simulations by employing fictional or real data might be an alternative to real longitudinal data (Müller-Benedict 2019; Becker 2009). The comprehensive application of such a simulation for ‘testing’ a RAT model has already been provided by Boudon (1974, pp. 76–80) himself.

4. CONCLUSION

In this chapter, we have learnt that the BG model has inspired rigorous sociological research on IEO. The discussion of RRA theory as a core element of the rational action explanation of individuals’ educational decisions in their life course has fueled a theoretical progression in sociological research into inequality and has illuminated empirical research in this area. Taking this research program, which is obliged to methodological individualism, for granted, we have witnessed substantial improvements – extensions and specifications – of the initial BG model. These improvements demonstrate the lively and innovative research that is taking place in the sense of a rigorous sociology. Measured by citations within the scientific community, the article by Breen & Goldthorpe (1997) on the explanation of less declining class-related (or changing gender-related) IEO became a popular reference. The strength of the BG model – shared with similar models – is its
precision, upgradability, compatibility and scope. As we have seen, it is possible to use this model for the explanation of many phenomena related to IEO. Breen & Goldthorpe (1997) are extremely successful in showing that such a model comes with significant advantages. On the one hand, it is possible to integrate a number of single factors related to educational differentials into the model (e.g. time horizon, discounting rate, hedging, socialization, educational policy and societal change, such as economic modernization and cycles of labor market conditions). On the other hand, the model can be used to explain different social phenomena such as educational expansion, gender reversal in education and the persistence and decline of IEO across time and countries. In this respect, the BG model is an important contribution to rigorous sociology in general and to sociological research on social stratification in particular.

However, as already mentioned above empirical tests published over the last 20 years provide mixed results for the BG model and of the RRA hypothesis. Methodologically, this could be explained by differences in the quality of data, appropriateness of the model design and specification, and the reliability and validity of the mechanisms and measurement of variables. In a theoretical respect, it has become obvious that the RRA hypothesis is still the most vulnerable area in the BG model. This suggests a need to replicate empirical applications and tests of the core assumptions of the BG model. These tests must follow realistic and progressive strategies – i.e. the replications should be extended to sequential educational decisions across an individual’s educational trajectory. Since the educational trajectory is endogenous, it is plausible that the outcomes of previous educational decisions and transitions will have an impact on decisions in the future. Such a longitudinal design would be optimal for testing the assumptions of the BG model.

Regarding the RRA hypothesis, the following issues should be addressed in detail. First, it remains unclear why other benefits are not considered – such as striving for income or a prestigious career – that could contribute to status maintenance as an unintended consequence of purposive action. The RRA hypothesis does not explain why different social groups in the population strive for different aims by intensive investment in their education. The mechanisms behind these desires are not addressed in the RRA argument. Of course, it is argued in the BG model that the cost of failure results in the case of an uncertain probability of success to take a less demanding educational pathway. However, the question arises of whether there are positive incentives that make individuals strive for status maintenance (Jæger & Holm 2012, p. 223). Social recognition related to a specific educational attainment and physical welfare as a consequence of an attained class position are examples of such incentives (Jæger 2007, p. 452; Becker 2003; Erikson & Jonsson 1996). Furthermore, it is still unclear why class position itself leads to the desire for maintaining status. Second, the increased enrolment of women in higher education and the gender reversal of educational attainment could be explained by factors other than RRA. It is evident that a significant characteristic of women’s marriage patterns has not changed during the educational expansion: their aversion to choosing a partner who provides a lower educational degree or class position than they have themselves attained (Becker & Jann 2017). Other aims, such as economic independence or emancipation, are also motives for attaining higher educational degrees (Becker 2014; DiPrete & Buchman 2013). Third, the model by Boudon (1974) is applied to the explanation of the educational differentials between natives and immigrants owing to
the primary and secondary effects of a migrant background (for an overview, see Nauck 2019). The motive for migration is often an immigrant’s hope of finding better opportunities abroad for an affluent way of living. This is also true for the so-called ‘guest workers’ in European countries, who often attain a higher educational degree than their parents before they leave their home country. Furthermore, immigrants are afraid that there is discrimination against them in the labor market of their destination country. In order to avoid potential discrimination, they seek to invest as much as possible in their own and in their children’s education (for an overview, see Kristen 2019). According to these examples, investment in the education of children as an intermediate good is an attempt to solve a problem. One of the problems – besides other issues, such as subsistence and approval – is the intergenerational reproduction of the class position, which might result in desired benefits such as physical integrity and social recognition by a family’s social network (Stocké 2019; Jæger 2007). From the perspective of RAT, this purposive action is extremely appropriate in modern societies with a public educational system and a market-based economy.

Finally, for a sociological explanation of why and how the persistence of educational inequalities has changed, a dynamic multi-level explanation is needed. In order to reveal situation effects (the macro–meso–micro linkage) on the one hand, empirically confirmed ‘bridging hypotheses’ are still underspecified in the current state of sociological research. For example, how do different social classes evaluate economic developments regarding investment in education? How does an employer’s demand for skill affect an individual’s educational decision? Does educational policy have an effect on the cost sensitivity of lower-class families regarding higher education? On the other hand, the development of transformative hypotheses that translate single educational choices at the micro-level into educational inequalities as their aggregated result at the macro-level still lags behind the theoretical reconstruction in the spirit of the macro–micro linkage (Figure 19.1; see the chapter by Raub, De Graaf & Gërxhani). For a complete explanation of interesting phenomena such as IEO or changes in educational differentials, it is necessary to develop hypotheses for the transformation of single decisions and actions to the social aggregate (Raub et al. 2011; Wippler & Lindenberg 1987). The organizational structure and institutional rules of the educational system should be taken into account, because the institutionalized procedures of selection and allocation matter (Dollmann 2019). For example, it could be assumed that the features of the educational system affect the primary and secondary effects of social origin. The more an education is stratified, the more branching points have to be overcome on the route to university; the more segmented and the less permeable the educational pathways, and the more different educational options that are offered, the more important the secondary effects of the emergence and reproduction of IEO become; and the more rigid the sorting and selection functions regarding school performance, achievements and skills, the more the role of primary effects at the branching points in the educational system is strengthened (see Figure 19.1). These transformation problems in the explanation of the persistent IEO should be addressed in future research. A complete multi-level theory – i.e. a theoretical linkage between each of the analytical levels by empirically confirmed hypotheses – provides a sociologically complete explanation of IEO in modern societies in the spirit of a modern sociological science and rigorous sociology.
REFERENCES


