

In 'Caregivers' Experience of Separation from Children in Daycare' Deborah Court and Cilly Shohet (Bar Ilan University) and Michael Hantz, analyse, child caregivers' experience of separation from young children in their care, an area of research not widely researched. In-depth interviews with Israeli day care workers demonstrates that separation is difficult and painful.

Finally, in 'Globalisation and Values Education in the History/Social Studies Classroom', Joseph Zajda (Australian Catholic University) discusses the multi-faceted nature of globalisation invites contesting and competing *ideological* interpretations, numerous paradigms and theoretical models have been also used to explain the phenomenon of globalisation and its implications for values education in schools around the world.

Values education in the global culture is emerging as a timely topic and is attracting a great deal of interest globally – from Australia, across the Pacific Basin, to the Russian Federation. It has been argued that forces of globalisation have produced characteristic shifts in values education across the world (Brady, 2010, Zajda, 2008, Zajda, 2009, Zajda, 2010). Both macro and micro societal factors have been affecting the directions of values education in various countries (Cohen & Romi, 2010, Zajda & Daun, 2009). The article concludes that values education to be meaningful, engaging and authentic must involve a greater sense of community, more emphasis on cultural diversity, and a deeper and critical understanding of democracy, equality, human rights and social justice for all.

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Editor

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The Concept of "Talent Loss" in Educational Theory and Research

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Abstract

The purpose of this article is to review and revitalize the concept of "talent loss" in educational theory and research. It is our contention that the concept, while it has had a long and varied history among educational researchers, has recently surfaced and is providing useful insights into inefficiencies in educational systems, which are much to the detriment of individual students as well as societies. After we trace the history of the concept, we consider aspects of its current renewed use, in which we focus on its relevance for understanding social disadvantage among youth, gender differences, and the migration of talent between countries. We conclude by arguing that the concept of talent loss, in its various forms, should receive greater attention by educational scholars, as well as by developmental psychologists and youth researchers.

Keywords: talent loss, social disadvantage, youth, gender differences, migration

Introduction

Talent loss is a concept evoked, often implicitly and less often explicitly, in developmental psychology, sociology of education, youth studies, and socio-economic research and policy. The term is usually understood with respect to unrealised human potential, which provides the opportunity for varying definitions and interpretations. However, the dominant expositions of talent loss relate it primarily to the experiences of a specific age group, that is, high school students. On occasions "talent loss" is employed merely as a figure of speech without attention to a clear definition or a comprehensive attempt at conceptualisation and contextualisation (Blau, Moller, & Jones, 2003; Trusty & Niles, 2004).

As a current concept, the notion of talent loss and its prominence cannot match that of "individualisation", "globalisation" and other

iconic terms which enjoy popularity in educational research. Yet the under-utilisation of talent, and thus the problem of talent loss, remains of central importance in educational research and policy. This is because, as Coleman once pointed out (Kerckhoff, 1990), modern education systems are expected to nourish talent and enable all students to reach their full intellectual capacity. When an education system falls short of enabling students to develop their potential abilities, talent loss is said to occur both for an individual and for society. For the individual, under-utilisation or mobilisation can lead to a lowered self-image or self-esteem, a sense of deprivation (Carnoy, 1994) or even ongoing frustration (Post, 1990). For the society, the loss of talent can mean the loss of social productivity or some form of group social discontent. Despite these potentially serious implications, a comprehensive debate over talent loss as a concept and as a phenomenon occurring in schools is yet to take place.

Given these issues surrounding the talent loss concept, the purpose of this article is to provide a systematic overview and a consideration of its relevance as a theoretical and empirical construct which may be valuable in the analyses of persisting educational and occupational inequalities affecting young people. It is our contention that the concept, although not always directly acknowledged, is implied in studies which explore the rise of new forms of social inequality. Our goal is to raise the awareness of this concept and highlight its future promise in educational theory and research.

Early conceptualizations of talent loss

The concern with talent loss has a long history. Essentially, the discussions of talent loss predating the 1990s were linked to three types of educational issues: the provision of basic human needs that enabled the delivery of education, the retention of youth in education, and the special needs of gifted and talented students (Holland & Astin, 1979).

In the mid-20th century, both educational and development researchers were primarily concerned about economic and social conditions which equipped young people with skills seen as appropriate and essential for rapidly growing modern economies (See, for example (Watts & Fretwell, 2004)). Much of this concern about talent loss was implicit in the theories of human capital and in the development of strategies (for example, the provision of education, health, and other basic human needs) to improve the productive performance of both individuals and societies (Becker, 1975; Denison, 1962; Woodhall, 1994). The gap between the actual productive performance of a society and its perceived potential was called "reserves of talent" (See, for example, Yusuf, 2007).

Another early approach to the study of talent focused on variables related to premature school leaving (Husén, 1960). In fact early school leaving or "dropping out", was considered synonymous with talent loss (Holland & Astin, 1979), as the expansion of modern economies with their occupational updating generated a strong demand for highly skilled labour. In this context the notion of talent loss was also linked to the structure and organisation of education systems which favoured young people from privileged backgrounds, to the detriment of others.

One of the earliest concerns about lost talent within an educational context was put forward by Husén who was one of the foremost researchers of the 20th century and architect of the Swedish comprehensive education reforms of the 1960s. Husén (1960) was one of the first to attempt a systematic study of structural constraints in schools which contributed to early drop-outs. He argued that selective school systems contributed to talent wastage in society by early selection into programs or streams, which did not provide for the possibility of movement between programs, thus preventing later opportunities for talent development and utilisation. For Husén, school dropouts and early leaving were symptoms of lost talent, and comprehensive schools were seen as one means of lowering talent wastage. This was the first time that the structure of national education systems had been identified as potentially conducive to, or preventive, of talent loss.

From a slightly different perspective, at one time or another, attention focused on talent as a form of "gifted" ability in children and youth, and the preoccupation was with the identification and facilitation of the development of high ability students. (Heller, Monks, Sternberg, & Subotnik, 2000). Therefore, considerable effort has been directed to the treatment and schooling of talented children (Holland & Astin, 1979).

Most of the early concerns about reserves of talent focused on the importance of material needs for talent utilisation, but for instance McClelland (1961) argued that social psychological variables, such as motivation and need for achievement, were also crucial in the development and the full utilisation of human potential. Such arguments set the context for the study of talent loss in terms of the structurally bounded individual agency of an actor. They also underscored the importance of studying motivational factors, in addition to academic ability, as the central criteria which identified talent (Holland & Astin, 1979).

Even before McClelland's work, Frank (1935a, 1935b), a social psychologist, recognised that strong motivational forces were contained in the aspirations that young people held about aspects of their future.

This raised the possibility and hopes that strongly motivated and determined individuals could and would overcome societal barriers to high level educational and occupational attainment. By the 1950s, social psychologists had begun to differentiate between aspirations and expectations, which they defined accordingly as future plans unbounded and bounded by the perceived structural constraints of society (Caro & Pihlblad, 1965; Empey, 1956). This conceptual distinction between aspirations and expectations has often been interpreted as the recognition of the personal or social "obstacles" to realising personal goals which could range from an awareness of one's individual limitations (for example intelligence or physical ability) to social or structural obstacles (for example racial or gender prejudices, cost of schooling, or the self-concept of academic ability developed in response to grades received at school). Thus talent loss came to include the inability to realize one's individual potential as a result of structural barriers within social institutions¹. The individual potential, in its own turn, became equivalent to the adolescent aspirations and expectations which focussed on educational and occupational goals. Not every ambitious youth, however, could be construed as experiencing talent loss when the early aspirations and expectations were abandoned or unrealized. Therefore, beginning from the 1990s, most studies which explicitly addressed talent loss focused on ambitious and academically able youth who encountered difficulties in maintaining or realising their expectations due to lack of sufficient social, cultural or economic capital, due to their gender or ethnicity.

Over 40 years ago, it was also recognised that school career counselors held key "gatekeeper" positions in giving career advice to school students (Cicourel & Kitsuse, 1963). The cognitive and personality traits of students were seen as being related to an appropriate "fit" with particular occupations (Holland, 1997). School counsellors used this research knowledge not only to try to match individuals with particular career possibilities, but to help individuals negotiate the societal constraints which could impede the attainment of these occupations.

Later it became apparent that there existed systematic differences between genders with respect to the level and field of education, and status and field of employment that they desired. The strong gender typing of aspirations and expectations attracted attention and raised concerns (Marini & Greenberger, 1978). In those early studies, girls were found to hold aspirations far more modest than boys. The difference in those levels of ambition was attributed to the perceived and expected primacy of care-giving and home-making roles in girls' future adult lives (Marini & Greenberger, 1978).

By that time the earlier concerns that students' aspirations and expectations were no more than "flights of fancy" and essentially meaningless for talent research (K. L. Alexander & Cook, 1979) had been abandoned. Empirical studies in the 1970s and 1980s tended to find positive links between aspirations and expectations, and later life attainments. For example, students who could identify their specific vocational plans while still in school had a better chance of getting ahead compared to those who did not have plans. The evidence for the predictive power of early plans for later attainments was found in large-scale studies in many countries, including Canada (Porter, Porter, & Blishen, 1982), Australia (Carpenter & Fleishman, 1987; Saha, 1983), the United States (Haller, Luther, Meier, & Ohlendorf, 1974), Costa Rica (Haller & Portes, 1973), and Brazil (Hansen, 1973).

Thus, by the end of 1980s the study of talent loss was firmly set within the fields of educational and attainment research. It sought to understand factors which facilitated or hindered educational and occupational attainment. The potential problems in studies of talent loss, i.e. definitional problems in categorising "the talented" and "the non-talented", the focus on high-school years as the only life stage at which talent loss occurred, and the overreliance on academic performance as an indicator of talent, had been recognized (Holland & Astin, 1979). Individual determination and motivation was seen as an important component of talent, which was perceived as affected but not entirely determined by various forms of social disadvantage. Moreover, talent loss was a concept with a clear temporal or longitudinal dimension, which required comprehensive information about youth aspirations, expectations and their subsequent educational and occupational pathways and achievements. Although some research explored the themes of talent loss, the more precise operationalisations of the concept, grounded in higher quality longitudinal data, did not appear until the 1990s.

Recent conceptualizations of talent loss

The last two decades have seen conceptualizations of talent loss in educational research which have followed closely the original conceptual framework. However, they have been in a better position to utilise high quality longitudinal information which traced youth experiences and explored their relationships with social psychological variables. The latter were understood and approached as flexible and dynamic and thus prone to change over time.

This literature conceived talent loss as unrealised potential which arises from giving up on early ambitious expectations while young people are still in high school. High achievers who lower their initially ambitious plans are thought to experience talent loss. Later on, students

who did well in school, planned to enter prestigious tertiary education courses and high status employment are also considered as lost talent if they failed to realise their expectations. Finally, high achieving students whose aspirations exceed their expectations due to perceived structural constraints also belong in this conceptual category. These definitions are related to the seminal study of lost talent by Hanson (1994, p. 159) which was based on state-of-the-art analyses of suitable longitudinal data.

This access to longitudinal data produced studies which not only described the relationship between students' plans and attainments but documented the impact of specific patterns of change in intentions (i.e. "warming up", "cooling out" and "holding steady") on the educational and occupational outcomes of youth (Alexander, Bozick, & Entwisle, 2008; Hanson, 1994; Rindfuss, Cooksey, & Sutterlin, 1999). Furthermore, complex interrelationships between gender, family resources, and school resources which change over time were explored, giving rise to new theoretical expositions of the subtle processes which continued to produce talent loss in meritocratic and equity-oriented educational systems (Hanson, 1996). Finally, international comparisons cast light on similarities in student educational and occupational expectations (Marks, 2010; McDaniel, 2010; Sikora & Saha, 2009). This was the first step towards understanding the extent to which talent loss processes are locally unique or have features common to all education systems which are influenced by global ideologies of meritocracy and expansion.

Talent and social disadvantage

More recent studies of talent loss have focused in greater detail on the manner in which social disadvantage operates, often in a surreptitious manner, to restrain the potential of some talented youth. For the most part, the greatest talent loss continues to occur among students with lower levels of economic, social and cultural capital (Feliciano, 2006; Feliciano & Rumbaut, 2005; Heus, Dronkers, & Levels, 2008; Sikora & Saha, 2009; Trusty & Harris, 1999). Moreover, it can and does occur even in education systems in which much effort was invested in creating equitable learning environments (Hanson, 1994). In fact, in some studies the definition of talent loss denoted specifically students from modest backgrounds with initially high levels of academic ability who, over time, showed little progress and moreover displayed declining levels of ambition (Trusty & Harris, 1999).

Talent and youth

This recent interest in talent loss has been stimulated by the prominence of research questions relevant to the individual control over one's "biography" and choice. Although never directly connected, the talent

loss literature shares many characteristics with the writings on 'risk societies' (Beck, 1992) which have focused on 'a growing gap between individuality as fate and individuality as practical capacity for self-assertion' (p. xvi). This literature has reopened the question of youth choice and the ability of young people to realise early plans. The conceptualisation of plans has been subject to debates, particularly within youth studies, which emphasise the notions of "choice biography" or "risk biography". These terms convey the uncertainty youth feel in the globalised, fragmented and volatile reality of contemporary education and work (Brannen & Nilsen, 2002; Leccardi, 2005). However, even though the confidence in making long term plans may not be strong among all groups and in all settings, most studies in this tradition acknowledge that young people continue to make plans in various forms. Sometimes these plans are constructed in a quite tentative manner, are considered as flexible "projects" or "tillers of decision-making". In contrast, in the social inequality tradition, which relies primarily on survey data (Buchmann & Park, 2009; Goyette, 2008; Khattab, 2005; Patton & Creed, 2007), youth plans are conceptualised most frequently as educational and occupational aspirations or expectations. The degree to which these aspirations and expectations, where they exist, might be firm or only tentative is not explored in the framework of these studies (but see Sikora & Saha, 2011 for an exploration of stability in adolescent plans). Yet, it is known that having ambitious educational and occupational plans helps young adults' attainments (Croll, 2008; Feliciano & Rumbaut, 2005). Both traditions of research also recognise that it is the disadvantaged youth who are more likely to find it difficult to realise their plans and take control of their lives.

Despite earlier calls to recognize that talent loss may occur in all life stages (Holland & Astin, 1979) both traditions agree that youth is a particularly important time to develop and utilise talent. Not only is it during childhood and youth that unusual talent is identified, but it is also thought that it is during this period that talent should be nurtured. In addition, it is during this life-course stage that individuals develop a more mature and critical approach to their own ability, as well as to their future career trajectories (Holland, 1997; McMahon & Watson, 2008; Turner, 1964). This is the stage at which the tension between the individual agency and the frameworks of institutional structures becomes apparent in the process of the so called 'structured individualisation' (Brannen & Nilsen, 2002, p. 532).

Gender continues to feature prominently in talent loss studies but it is now boys not girls who are more likely to have less ambitious expectations, which stimulates concerns about the 'boy problem' in secondary education (Sikora & Saha 2009).

Gendered choices and talent loss

In 1990s it became apparent that, at least in the USA, girls no longer lagged behind boys in their science or maths performance, and when they did the difference was smaller than generally believed, in spite of the fact that girls shunned physics and mathematics courses and related employment in engineering and computing. Hanson explored the cumulative and complex micro-processes which over time led the talented women to exit science courses and focus on other education and career paths. Her analyses confirmed the existence of persisting cultures of gender essentialism which construe women and men as particularly competent in specific tasks to do with nurturance, care, interpersonal communication or with technological problem-solving and analysis (Charles & Bradley, 2002; 2009; Charles & Grusky, 2004). The extent to which these cultures, reinforced by behavioural interactions and entrenched institutional differences, lead women and men to pursue different careers, e.g. engineering for men and biological sciences for women, can be also seen as talent loss. This is because the cultural forces of horizontal gender segregation crowd women and men into the different fields of education and employment.

Interestingly, while vertical inequalities between young men and women in levels of expected and attained education and in status of employment have been abating (Shavit & Blossfeld, 1993; Sikora & Saha, 2009), horizontal segregation shows no sign of decreasing as women and men continue to study different courses and work in different occupations (Charles & Bradley, 2002, 2009; Maria Charles & Grusky, 2004). Yet, there is no consensus that the horizontal segregation by gender is a form of talent loss. Indeed there is no agreement or even a comprehensive discussion of this issue as some view this segregation as the execution of the free self-expressive choices of men and women, i.e. what both genders want and choose to do. Ironically the growing emphasis on self-expressive values in the education system are conducive not only to persisting but even deepening gender segregation. This is because boys and girls legitimise their choices of courses and careers through "realising" their gendered self-identities. In this context horizontal segregation may not be even seen as a form of traditional inequality understood as the absence of 'equal opportunity to develop autonomous choice' (Inglehart & Welzel, 2005, p. 284). However, educational research on inequality is unequivocal that segregation is associated with a number of possible adverse consequences which, in the process of pursuing apparently 'self-expressive' gender values, segregate young men and women into different degrees and careers (Charles & Bradley 2009).

Cross-national mobility of highly qualified individuals and talent loss

The increased mobility and highly transitional nature of educational and work experiences of youth represents the final form of talent loss which we consider. This form occurs when there is movement of human capital between countries, and especially between the developing and the developed countries (Agrawala, Kapurb, McHalec, & Oetl, 2011; Lin & Pleskovi, 2008). The world has become increasingly one integrated labour market with standardised educational systems which have been shaped by the influence of international agencies such as the United Nations and the World Bank. As a result, the mobility of talented and skilled individuals has gained in significance (Adams, 2003). Talent loss in this context is often referred to as "brain drain", that is a one directional movement of skilled individuals from economically deprived countries to the core nations of the developed West. The "loss" occurs on the part of the sending nations. This is in contrast to brain circulation or brain gain. Brain circulation denotes the situation where the skilled persons leave the country of origin but maintain active involvement in socially significant activities, for instance entrepreneurship or specialised consulting activities, in their home countries (Kuznetsov, 2006; Vertovec, 2007). Brain gain refers to the situation where young skilled individuals leave their home country to obtain new skills, not accessible in their home education systems, and return to work in their countries of origin. In this context, talent loss is not necessarily associated with adolescents or young adults, but is linked to the complex migration pathways of the general workforce.

Recently, however, these categorisations have become questionable because, in contrast to earlier studies which regarded the outmigration of the academically able students as a form of irreversible talent loss, the latest approaches perceive the dynamics and complexity of trans-border mobility through more optimistic lenses, even if the skilled individuals maintain residence away from their home countries (Commander, Kangasniemi, & Winters, 2004; Kuznetsov, 2006; Vertovec, 2007).

The important difference between this most recent conceptualisation of talent loss and its predecessors is that individual migration is no longer seen in terms of the zero-sum game between the sending and the receiving countries. So the benefit for the individual can be simultaneously associated with gains for both the host country and the country of origin.

Talent loss in recent empirical studies

The studies in the 1990s were the first ones which provided some es-

timates of the extent of talent loss as defined within the particular approaches reviewed above. Firstly, Hanson analysed the USA *High School and Beyond* data spanning the 1980s and found that 16% of the youth in her sample had educational expectations lower than aspirations. Of this group, 27% had experienced reduced educational expectations after high school, and the "loss of talent" was higher for students with lower levels of economic, social and cultural capital. Hanson argued that when talent loss is defined as the lowering of expectations, it has negative consequences at both the individual and societal levels.

Amongst the various determinants considered by Hanson, low socio-economic status in the family of origin turned out to be the only significant predictor of talent loss, even after some differences in economic and cultural capital between girls and boys were taken into account. Following her conceptualisation, Trusty and Harris (1999) found that the most powerful predictor of talent loss was the low socio-economic position of a student's family. Much of the SES effect was mediated through the differential involvement of parents who provided resources to their adolescent children. But the effect of these family resources exacerbated the risk of talent loss of young men and young women to varying degrees. On the whole, studies within his tradition have consistently documented gender-specific differences in experiences of talent loss.

In another study which focused on the loss of talented women from the specific branches of science, Hanson (1996) found that gender contributed to talent loss indirectly through socialisation within the family and the school, through family resources, school characteristics, sex role attitudes, academic achievement and grades, course taking and attitudes towards particular subjects. In her sample, which comprised several longitudinal surveys in the USA covering different time periods in the 1980s, almost half of all young women who showed promise in science, were out of the sciences by the final year of the six-year survey period (Hanson 1996: 177).

Alexander, Bozick and Entwisle (2008) analysed the 1990s data from a group of Baltimore youth and found that declining expectations, which constitute talent loss according to one of the definitions, were common among disadvantaged youth. Of almost 48% of youth who hoped to finish university in Year 12, 44 % abandoned their hopes by age 28, while 25% earned a BA degree. Some individuals with low resources persisted in their intention to finish university throughout their twenties despite difficulties with enrolment and completion, but the incidence of lowering the initially high expectations was significant. The authors of this study identified three distinct patterns which characterised change in initial educational plans: warming up, holding

steady and cooling out. "Cooling out" is the institutional process often experienced by disadvantaged youth who receive signals that their educational and occupational expectations are unrealistic, given their resources or academic ability. "Cooling out" is thus directly related to talent loss. In recognition of the rise of lifelong education ideologies and their impact on people's educational strategies, Alexander and his colleagues called for consideration of the relationship between plans and attainments not only in adolescence and early adulthood, but also for those at later stages of their life course.

In Australia, Sikora and Saha (2011), studying the data from young Australians who were in Year 9 in 1998, found that by Year 12, 15% of students, whose scores in maths and English tests fell in the top 50% of their age group, gave up their earlier plans to study university. Further, 15% of so defined high achievers lowered their initially ambitious occupational expectations while still in high school. In the same cohort over 25 % of young people who did well at school failed to realize their educational plans by the time they were 24 years of age. A similar proportion failed to achieve professional or managerial employment for which they planned while in high school.

These estimates of talent loss vary from sample to sample and with particular definitions. What they demonstrate, however, is that with the increased access to life history data of students and young people, rigorous estimates of the extent of talent loss are possible to obtain and to compare between points in time and groups of people. This moves the research on talent loss to a new level, as without some sense of how widespread lost talent in each of its specific forms is, and how its incidence varies over time, the related discussion is bound to remain purely speculative in nature.

Individual and social structural characteristics that affect lost talent

In contrast to the earlier focus which centred on individual characteristics, the interactions of individual traits with school and wider social contexts have come into focus in the recent and more sophisticated models of talent loss incidence (Hanson 1996: 20). Because of this recognition, the expectations of individuals have come to be seen in a more complex manner in recent decades, not only as the product of individual dispositions, but also as the result of a wide array of external influences, such as cultures and institutional opportunity structures inherent in classrooms, schools, or entire societies. While there are fewer studies of correlates of lost talent than of educational and occupational expectations of students, generally factors which are associated with low expectations are also good predictors of talent loss (Sikora & Saha, 2011).

Therefore studies of students' expectations are informative with respect to the determinants of talent loss conceptualised as lowered or unrealised youth ambitions.

One prominent finding of the studies of educational and occupational expectations is that all high school students across the world are very ambitious with respect to their expected attainments. A large proportion of them expect to complete university and work in one of the highly skilled professional occupations. It has been pointed out that, although the proportion of skilled professionals in the labour force has been increasing, the gap between the opportunities for the highly skilled and adolescent expectations is such that everyone cannot attain their goals. These high ambition levels apply particularly to young women but also men, to students of humble origins and the children of the elite, immigrants, and locally born students too. Trend comparisons indicate that, at least in the USA, ambition levels have risen considerably among younger generations of students (Goyette, 2008). Consequently, some analysts warn against the possible negative consequences of these "flights of fancy" at both the individual and societal levels (Alexander, et al., 2008; Reynolds, Stewart, MacDonald, & Sischo, 2006). In other words, large numbers of young people are at risk of talent loss understood as lowered or unrealized expectations.

Gender, the socio-economic status of a student's family, as well as race and ethnicity, are the key factors related to talent under-utilisation. The first and most powerful factor affecting a student's propensity to experience talent loss is family environment. The socio-economic status denoted by the education and occupation of parents has been identified as the single most significant correlate of lowering educational and occupational expectations of American students, above and beyond the influence of material possessions in students' homes (Hanson 1994; Trusty & Harris 1999). But the full model of determinants of talent loss in this tradition includes a long list of additional variables (Hanson 1996: 20). The influences of family environment are mediated through the family structure, mother's work status, family involvement in school and school work, parents' expectations of educational and occupational attainment of their children, age at marriage and the birth of the first child. Individual factors include sex-role attitudes, which are particularly pertinent when talent loss denotes gendered choices of fields of education and employment, self-esteem, locus of control, identification with school, perceptions of teachers, and attitudes towards mathematics and science. School environments are also relevant. Features such as school sector, the percentage of female teachers in particular fields, teachers' attitudes and characteristics, academic versus vocational focus of schools' curricula, peer characteristics and course availability can all be relevant for explaining talent loss.

So far there are no cross-national comparative studies which utilise longitudinal data to compare the determinants and incidence of talent loss as defined in this tradition. In contrast, many international comparisons, albeit cross-sectional and aggregate in nature, have been conducted on the cross-border movement of talented individuals seeking better education and work opportunities. When talent loss is conceptualised as the lowered or unrealised plans of individual students, much of the recent scholarship addresses the levels of ambitions and their determinants rather than the changes in ambitions and their consequences. Educational and occupational expectations and their determinants have been subject to comparisons (McDaniel, 2010, Sikora & Saha, 2009) which suggest that both the stratification of education systems and labour market condition shape, above and beyond individual and school differences, what young people believe they can achieve. This is in line with the observations of Husén (1960), but it is noteworthy that several decades after he linked the comprehensive education systems to a lower incidence of talent loss, it continues to occur, particularly among the disadvantaged students. Evidently the knowledge of the factors which contribute to talent loss is insufficient to develop and implement successful preventative policies.

With respect to expectations, a recent multilevel analysis of occupational ambitions has found that individual level effects are relatively powerful, especially when compared to school environments or other higher level structural contexts. Individual level factors account for between 70 and 90% of the variance explained in multi-level models (Sikora & Saha, 2007). In spite of the magnitude of these individual effects, the additional contribution of higher order effects, i.e. school environments and the characteristics of national education systems, is far from trivial and, consequently, merits further research.

Many different estimates of talent loss, understood as the loss of human capital for developing countries, exist in the economic literature (Adams, 2003; Kuznetsov, 2006; Lin & Pleskovi, 2008). As this literature is sizeable, and the estimates vary greatly, their review is beyond the scope of this paper. However, it is noteworthy that almost all sources quote a steady increase in the numbers of students who migrate to obtain education overseas or the number of highly skilled workers who seek employment in developed countries. New Zealand, Ghana, Tonga, the Federated States of Micronesia and Papua New Guinea are amongst countries which experience the highest rate of talent loss when understood as brain drain (Gibson & McKenzie, 2010). However, recent research developments in this area problematize the concept of brain drain and point to the many long term benefits that arise for the sending countries when their talented citizens study and

then work abroad (Kuznetsov, 2006; Lin & Pleskovi, 2008). The future of research on lost talent lies in the potential to link these micro- and macro-economic investigations to the study of micro-sociological processes of youth expectations and attainment to arrive at a better understanding of the nexus between global economic forces and individual decision making.

Conclusion

With the growing availability of longitudinal survey data on youth and the wealth of comparative information on the economic and social conditions in many countries, the times have never been better to further develop the concept of talent loss and integrate its many interpretations. The last two decades demonstrate significant advances in the ability of researchers to trace and understand the complex processes that may create talent loss. The picture that emerges is that, although lost talent is seemingly about individual aspirations and choices, in large part it is about structural factors which shape individual choice over life stages. These structural factors are the cultural, economic and social capital of students' families, school communities and their whole nations. There are also persisting gender divides, apparent in the horizontal segregation of education and employment, of the type which not only continue to exist but with time become more entrenched and thus potentially invisible. Both self-expressive ideologies of individualism and the growing demand for "traditionally feminine" services come together to perpetuate the loss of talented women from areas culturally construed as masculine, while men are discouraged from entering areas culturally defined as feminine.

Although the conceptualisation of brain drain as talent loss is undergoing a comprehensive re-evaluation, there are many signs that migrations which once were seen as solely detrimental to developing economies, might soon be seen as resulting in individual and societal benefits. Similarly, there are signs that talent loss occurs at various stages of education and employment in many locations across the world. The challenge for researchers is to integrate the disparate bodies of knowledge on lost talent which focus on psychological, sociological and economic correlates and determinants, and which so far have been evolving largely independent of one another.

Note

1. Holland and Astin (1979, p. 425) saw talent loss as 'non-utilization of those personal capacities which are necessary for the occurrence of socially significant performance'.

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Promoting a Dialogue between Neuroscience and Education

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Abstract

There have been a number of calls for a 'dialogue' between neuroscience and education. However, 'dialogue' implies an equal conversation between partners. The outcome of collaboration between neuroscientists and educators not normally expected to be so balanced. Educationists are expected to learn from neuroscience how to conduct research with academic rigour, while neuroscientists are expected to learn which aspects of their work are of most interest to practitioners in the classroom. The purpose of this paper is to suggest that a dialogue would involve, at the very least, redressing the balance between neuroscience and education, and that neuroscience might have more to learn from education than the other way about. The argument draws on a range of published material that examines the possible connections between neuroscience and education, as well as some of the popular representations of neuroscience in the mass media. Particular reference is made to the special issue of *Educational Research on neuroscience and education* published in 2008. Neuroscience is contentious, tentative and based on inferences that are less than certain, and consequently is as influenced by opinion as educational theory is. Because these features of neuroscience are hidden, it is difficult to advance a critical dialogue. A dialogue between neuroscience and education has not been promoted so long as it has remained in the hands of neuroscientists. It is time to try putting the arrangements for discussion in the hands of educationists and making neuroscientists face some tough questions.

Keywords: brain imaging, cognitive constructivism, fMRI, neuromyths, neuroscience, learning

Introduction

And there's a reason for this, why men experience pain more acutely than women – that's because there's always part of a woman's brain thinking about shoes. (O'Hanlon, 2001)

There are those who think that the time is now right for the development of a new field of mind, brain and education (Fischer et al.,