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The evolution of awareness and belief ambiguity in the process of high school track choice [☆]

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ABSTRACT

In this article, we provide novel survey evidence on middle schoolers' knowledge and on how such knowledge evolves in the process of high school track choice. Children in our study display only partial awareness of the set of available tracks, and they report low confidence regarding their beliefs (i.e., substantial belief ambiguity) about their likelihood of a regular high school path. This is especially the case for lower-ranked tracks. Students start 8th grade with greater information about their preferred alternatives and continue to concentrate their search in the months before pre-enrollment. Children from less advantaged families display lower initial perceived knowledge and acquire information at a slower pace, particularly about college-preparatory schools.

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1. Introduction

Human capital influences a wide range of private and social outcomes, including skill mismatch, long-term unemployment, and income inequality. Schooling and early career decisions of children and young adults mark key stages in the process of accumulation of human capital at a time when students may still feel uncertain about future consequences of alternative paths and have limited knowledge about specific aspects of the decision problem.

The goal of this paper is to improve our understanding of high school decisions by Italian households in two main dimensions. First, we investigate the level of middle schoolers' perceived knowledge and how it evolves during the first semester of the year before pre-enrollment in high school. We are particularly interested in the evolution of awareness

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sets over available high school tracks and the level of confidence (or ambiguity) in students' beliefs about the likelihood of experiencing a regular academic path in high school. Second, we study how the level of knowledge and its evolution differ across school types and student background characteristics.

Schooling and early career decisions are shaped by students' and parents' awareness (or lack thereof) of the available choice alternatives. For example, some youths and their families might not be aware of the existence of specific schools or careers that may be good matches for them. Even when aware of their existence, they might not know of relevant institutional attributes of schools. Building on the most recent theoretical literature, we use the term *limited awareness* to denote situations of incomplete knowledge about choice alternatives, choice consequences, or causal relationships (e.g., Karni and Viero, 2013b, 2013a, 2015). Despite the obvious importance of (limited) awareness for human capital investment and decisions, empirical studies on this topic are scant at best. The body of empirical work on (un)awareness to date has developed outside the field of economics. As a consequence, the existing literature does not use survey questions to address the relative explanatory power of economic theories.

Students' and parents' expectations are another essential element of schooling and early career decisions, as people evaluate their options by their perceived prospective outcomes. For example, a student's school choice may depend on the student's belief about their likelihood of a successful and timely completion of the curriculum. His/her decision may additionally depend on the student's belief about his/her chances of continuing onto college and/or finding a job after graduation. In real life, individuals and their families assimilate information from government announcements and media reports (e.g., school directories); communication from friends, extended family, and experts (e.g., school teachers); and personal experiences and observations of the experiences of others (e.g., older relatives and friends). The sampling process generating these types of information is obscure and likely to vary across individuals and families. In addition, the chances associated with future outcomes of consequential human capital decisions might be perceived as partly unknown and to some extent unknowable by students and their families at the time of choice. If so, such perceptions of uncertainty and the subsequent choice behaviors appear more germane to economic theories of subjective *uncertainty* rather than 'pure risk.'

Since Ellsberg (1961), the theoretical literature on choice under conditions of uncertainty has recognized the need to relax the assumption that decision makers hold a single vector of beliefs. Recent successful frameworks postulate that agents have 'multiple priors' or, equivalently, that agents hold a set of probability distributions over states and, hence, over choice consequences (e.g., Camerer and Weber, 1992 and Gilboa and Marinacci, 2013). In these frameworks, each probability distribution is viewed as a 'model,' and situations in which agents hold multiple probability distributions over states are referred to as examples of *ambiguity* or *model uncertainty*. The empirical literature, on the other hand, has not yet applied these frameworks to the data.

In this article, we begin to fill the above gaps by directly eliciting and analyzing survey measures of awareness of existing high school tracks and of belief ambiguity about the likelihood of graduating on time from high school, as perceived by a sample of Italian 8th graders at multiple times during the months preceding high school pre-enrollment. We first assess the information content and relevance for the choice of our new measures by documenting their correlation patterns with respondents' background characteristics and their predictive power on observed pre-enrollment decisions. Then, we quantify the extent of students' perceived awareness and belief ambiguity at the beginning of the 8th grade, and we document the evolution of those perceptions over the decision process, with special focus on how learning patterns vary across students' background characteristics.

Our unique dataset enables us to answer questions such as: At the start of 8th grade, what are the high school tracks of which children are aware? Do children hold ambiguous or unambiguous beliefs about the likelihood of successful and timely graduation from alternative high school tracks? Among children who start with limited awareness, does perceived awareness increase or decrease over the course of the decision process? Similarly, does initial perceived ambiguity about future school performance decrease or increase over the decision process? Does the evolution of children's perceived awareness and belief ambiguity vary by choice alternative and/or respondents' demographic and socioeconomic characteristics? If so, how?

Students in our study display limited awareness and significant ambiguity. Limited knowledge is particularly concentrated among low-ranked alternatives. Additionally, students' learning is incomplete and concentrated on their most preferred alternatives. We find important degrees of heterogeneity both in initial conditions and in learning patterns across demographic and socioeconomic characteristics. For example, conditional on a set of background and individual characteristics, including the student's GPA, children with a more educated mother display intensive learning, which is quite differentiated across tracks. Conversely, children with a father working in a blue-collar occupation display a more focused learning pattern concentrated on curricula of the technical and vocational (non-general) tracks. Foreign-born children start with smaller awareness levels and higher ambiguity levels relative to their Italian counterparts and follow a ('biased') learning pattern whereby their level of belief ambiguity about general curricula tends to increase over time.

Literature Only a few studies document limited awareness in the context of educational choices. Dawes and Brown (2002) and Hoxby and Avery (2014) respectively analyze prospective students' awareness of college alternatives and their knowledge of the admission process for college. Neither of these studies provides any measure of the evolution of knowledge.

A growing body of literature has measured and analyzed survey reports of youths' and (in fewer cases) parents' expectations for a range of outcomes relevant to educational decisions (e.g., see the reviews of Hartog and Diaz-Serrano, 2014 and Giustinelli and Manski, in press). The majority of these studies assess the 'validity' of survey reports of probabilistic expectations and/or use expectations measures to estimate microeconomic models of schooling or early career choices

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