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# ATTITUDES AND ASPIRATIONS TOWARDS SCIENCE: A NARRATIVE ANALYSIS OF A CHINESE IMMIGRANT STUDENT STUDYING AT A BRITISH SCHOOL IN SPAIN

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**Abstract:**
This article explores how a 16-year-old Chinese immigrant girl, Mei, narrates science education while studying for her IGCSEs at a British school in central Spain. Building on Altunbas *et al.*'s (2024) framework, the study combines self-determination theory with Bourdieu's concepts of capital, habitus and field. Three semi-structured interviews were analysed narratively, attending to temporal sequencing, turning points, repeated evaluative language, shifts in agency and tensions within Mei's account. Her story is organised through a marked contrast between her previous school in China and her present school in Spain. Migration does not erase the earlier achievement habitus, guilt about not studying, fear of losing and an instrumental concern with secure employment continue to shape her relationship with science. At the same time, Mei constructs an emerging autonomous STEM future. A childhood fascination with biology is redirected, for ethical as well as practical reasons, towards mathematics, physics, engineering and renewable energy. Family relatedness strengthens after migration, and her parents support her choices despite limited familiarity with the British system. The analysis shows that high competence, science capital and science aspirations can coexist with insecure relatedness and a legacy of controlled motivation. The combined framework illuminates how migration reconfigures, rather than simply replaces, the dispositions through which an immigrant student understands school science and future possibility.

**Keywords:** Chinese immigrant student; science education; IGCSE; British school; narrative analysis; self-determination theory; Bourdieu; science capital; migration

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## 1. Introduction

Students' attitudes towards science, such as confidence, perceived usefulness, engagement, feelings about science lessons and beliefs about whether a science-related future, are not adequately captured by asking whether they like or dislike the subject (Osborne *et al.*, 2003; Potvin & Hasni, 2014). These dimensions do not necessarily move together. A student may be highly successful in science but not identify as a "*science person*"; may value science as a qualification while disliking the way it is taught, or may enjoy scientific ideas while rejecting a science career. Distinguishing science as a discipline, science as a school subject and science as a possible career is therefore essential. What is more, migration adding another layer, immigrant students encounter science through prior educational experiences, which relate to their family histories and the social expectations of both origin and destination contexts. Their educational experiences do not simply disappear when they move; they travel with the migrant, but their value can change as immigrant students enter a new education system (Erel, 2010). At the same time, immigrant students may attach strong practical value to education and science because qualifications are imagined as routes to security, mobility or status (Kao & Tienda, 1995; Salikutluk, 2016; Sikora & Pokropek, 2021).

The present case is particularly layered. Mei, a pseudonym, is a first-generation Chinese immigrant student living in Spain, learning through an English-medium British curriculum and preparing for IGCSE examinations. She therefore occupies a transnational educational field rather than a single national system. Her account is shaped by schooling in China, a period of adaptation in Spain, the British examination pathway, relationships with Chinese and international peers, and family aspirations that cross national borders. The British school is not simply the destination against which the Chinese past can be measured; it is the present field through which Mei reinterprets that past and imagines her future.

This article takes the framework proposed by Altunbas *et al.* (2024) as its foundation. That framework combines Deci and Ryan's self-determination theory with Bourdieu's theory of cultural and social capital, habitus and field. The combination is well-suited to a case in which motivation, emotion and self-belief are inseparable from migration. However, rather than treating the interviews as a collection of isolated themes, the present study uses narrative analysis. The aim is to understand the journey Mei constructs, the turning points she identifies, the positions she takes up and the contradictions through which she makes her experience intelligible.

The principal research question is:

1) How does Mei narrate her perceptions of science education while studying for her IGCSEs in a British school in central Spain?

Two subsidiary questions are addressed:

2) How are competence, relatedness, autonomy and forms of controlled or autonomous motivation expressed in her account?

3) How do migration, family support, prior schooling, language, peer relations and the British examination field shape the value she assigns to science and to a science-related future?

## 2. Literature review

### 2.1 Attitudes towards science as a multidimensional construct

Attitudes have long been understood as learned orientations that influence how individuals evaluate and respond to objects or situations (Allport, 1935; Fishbein & Ajzen, 1975). In science education, Osborne *et al.* (2003) define attitudes towards science broadly, encompassing feelings, beliefs and values concerning science as an enterprise, school science, science's effects on society and scientists themselves. Reid (2006) distinguishes affective, cognitive and behavioural dimensions, while Potvin and Hasni (2014) identify enjoyment, motivation, self-efficacy, engagement and sociological variables as recurrent components.

This multidimensionality matters at age 16 because at IGCSE, science is simultaneously curriculum content, a high-stakes assessment, a credential and a gateway to post-16 choices. An account focused on grades may reveal confidence and institutional ambition without revealing enjoyment. Conversely, a student's fascination with a scientific topic may coexist with anxiety about assessment or ethical discomfort with a particular career. Science identity is therefore better understood as a process of becoming, in which recognition, emotion and imagined futures are continually negotiated (Avraamidou, 2020).

### 2.2 Immigrant aspirations, pragmatism and science capital

Research has often found that immigrant students and families hold high educational aspirations, sometimes described as "*immigrant optimism*" (Kao & Tienda, 1995). Education may be valued as a route to improved status or a more secure future, and science may be regarded especially positively because it appears to offer internationally portable qualifications and occupations (Sikora & Pokropek, 2021). Yet aspiration should not be confused with unqualified enthusiasm, where high expectations can coexist with pressure, incomplete knowledge of the host education system or uncertainty about how credentials translate into opportunities.

A science-capital perspective directs attention to the science-related knowledge, experiences and qualifications available to a student and family (Archer *et al.*, 2012; DeWitt & Archer, 2015). For immigrant families, this capital is mobile but not automatically convertible; a student may arrive with strong subject knowledge and examination discipline, while being unfamiliar with local assessment language or progression routes. Likewise, parents may offer strong emotional and material support without possessing the institutional knowledge needed to advise on IGCSEs, A levels or university applications. Migration can therefore transform the form and value of capital rather than merely increasing or decreasing it (Erel, 2010).

### 2.3 Relatedness, recognition and the international-school field

Perceived teacher support and peer belonging are consistently associated with science engagement and aspiration (Mujtaba & Reiss, 2013; Niemiec & Ryan, 2009). For immigrant students, classroom relatedness is inseparable from linguistic and cultural positioning. Feeling able to ask questions, being known by a teacher and finding peers with whom one can collaborate may determine whether competence is experienced as secure or fragile. In an international school, students may share migrant status while remaining divided by language, friendship networks, interests and prior educational experiences (Altunbas *et al.*, 2024; Niemiec & Ryan, 2009).

English-medium instruction and British qualifications may offer internationally recognised cultural and institutional capital, while everyday life takes place in a Spanish-speaking city. For a Chinese student, English may function as the language of academic mobility, Chinese as the language of family and community, and Spanish as a gatekeeper to local social participation. The relative value of these languages can differ across home, school, friendship and future-career fields, thus making a single "host culture" model insufficient.

### 2.4 Narrative inquiry and immigrant science experience

Narrative inquiry treats experience as temporally organised and socially produced rather than as a set of decontextualised opinions (Andrews *et al.*, 2013; Clandinin & Connelly, 2000). Narrators select events, establish contrasts, assign causes, evaluate what mattered and position themselves in relation to others (Andrews *et al.*, 2013; Riessman, 2008). A narrative may contain tensions that would appear inconsistent in a thematic analysis, but are analytically productive, a student can describe friendship as essential in one episode and as a distraction in another; can reject pressure while reproducing its language; or can value science both for curiosity and for financial security.

Interview narratives are also co-constructed. Questions, follow-up prompts, the relationship between interviewer and participant, and the setting all influence what can be told (Riessman, 2008). The analysis, therefore, does not treat Mei's words as a transparent account of an entire national education system; they are her situated interpretation, produced in conversation and oriented to the interviewer. Their value lies in revealing how she makes meaning of science education and migration (Riessman, 2008).

## 3. Theoretical framework

Self-determination theory proposes that motivation and well-being are supported when three basic psychological needs are met: relatedness, competence and autonomy (Deci & Ryan, 2012; Ryan & Deci, 2000, 2017). Relatedness concerns belonging and connection, competence concerns feeling effective and able to meet challenges, and autonomy concerns experiencing action as self-endorsed rather than coerced (Ryan & Deci, 2017). In education, these needs are interdependent, success may not sustain engagement if a

student feels isolated, while choice may be hollow if the student lacks the competence or information needed to act.

The theory also distinguishes qualities of motivation; external regulation depends on rewards or punishment. Introjected regulation is internally pressuring and often expressed through guilt, shame or contingent self-worth. Identified regulation occurs when a student personally values an activity's purpose, even if the activity itself is not always enjoyable. Intrinsic motivation involves interest and enjoyment in the activity itself (Deci *et al.*, 1991; Ryan & Deci, 2017). These distinctions are useful in Mei's case because "*working hard*" can mean very different things, avoiding public shame, protecting one's rank, pursuing a secure occupation, exploring a scientific interest or acting on a self-chosen future (Deci *et al.*, 1991; Ryan & Deci, 2017).

### 3.1 Bourdieu: capital, habitus and field

Bourdieu's concepts explain how apparently individual educational choices are structured by social histories. Capital refers to resources that are valuable in a given field. Economic capital includes material resources; social capital consists of networks and relationships; cultural capital includes knowledge, language, dispositions and qualifications; and symbolic capital refers to forms of recognition and status (Bourdieu, 1984, 1986). Habitus is the set of durable but revisable dispositions through which people perceive what is normal, possible and appropriate. Field is the structured social arena in which particular forms of capital acquire value.

Mei's prior schooling can be read as a field in which long hours, examination scores, public ranking, obedience and collective reputation held strong symbolic value. Her current school constitutes a different field, although not a wholly opposite one, examination performance still matters, but subject choice, privacy of grades and post-16 planning are narrated differently. Migration creates a potential lag between habitus and field. Dispositions formed under one set of rules may remain active after those rules change. Thus, guilt about leisure or fear of failure may persist even where the present school is less publicly punitive (Bourdieu, 1986; Erel, 2010).

### 3.2 Combining the frameworks

Following Altunbas *et al.* (2024), the analysis combines the two perspectives, self-determination theory identifies the quality of Mei's motivation and her experiences of autonomy, competence and relatedness. Bourdieu explains how those experiences were produced and revalued across different educational and family fields. The combined framework also guards against simplistic readings. Strong grades do not necessarily mean secure competence; a science aspiration does not necessarily indicate intrinsic motivation; and supportive parents need not possess high institutional knowledge of the British system (Altunbas *et al.*, 2024).

The analysis, therefore, asks not only whether Mei is motivated to study science, but what kind of motivation her narrative constructs, how it changes over time and which forms of capital enable or constrain it. Particular attention is paid to the relationship

between her durable achievement habitus and her emerging capacity to author a future in mathematics, physics and engineering.

## 4. Methodology and methods

The study is a qualitative single-case inquiry. Mei, a pseudonym of the student, is a 16-year-old girl who was born and educated in China before moving to central Spain with her mother. At the time of the interviews, she was studying for IGCSE examinations at a British school, pseudonymised as Rivers British School. She had also experienced a Spanish secondary-school setting before entering the British pathway. The purpose of the case is interpretive rather than representative; it is not to make claims about all Chinese immigrant students, but to examine in depth how one student constructs the relationship between migration, science education and future aspiration.

The data comprise three semi-structured, conversational interviews. Interview 1 concentrated on future study and career ideas, family relationships, migration, friendships and the perceived fit of different education systems. Interview 2 elicited an extended account of schooling in China, including the organisation of the school day, assessment, competition, science learning and teacher recognition. Interview 3 returned to discipline, "*face*", motivation and everyday self-regulation. The interviews were conducted in English. The conversational setting included follow-up prompts, interviewer reactions and occasional interruptions; these are treated as part of the conditions under which the narrative was produced.

Analysis proceeded in four stages. Each transcript was read holistically to identify its dominant episodes and emotional tone. A chronological map was developed across the three interviews, moving from childhood interest in biology, through schooling in China, to migration, current IGCSE study and imagined A-level and career choices. The analysis attended to narrative form, repeated contrasts between "*before*" and "*right now*"; shifts from collective or compulsory language, "*we*", "*you have to*", "*must*", to first-person agency, "*I choose*", "*I want*", "*I can*"; recurring words such as "*stressful*", "*competitive*" and "*give up*"; modal expressions such as "*maybe*", "*probably*" and "*definitely*"; and tensions between different versions of friendship, motivation and science identity. The reconstructed narrative was interpreted through self-determination theory and Bourdieu's concepts of capital, habitus and field. The theoretical concepts were used after the narrative arc had been established, rather than fragmenting the interviews immediately into decontextualised codes. The aim was to preserve Mei's temporal and evaluative logic while still connecting her account to broader questions about immigrant students' attitudes towards science.

The interviews were transcribed by automated transcription. For readability, repeated prompts, fillers and obvious transcription artefacts have been removed, and minor grammatical corrections have been made where the intended meaning was clear. Square brackets indicate clarifications; ellipses indicate omitted words. Ambiguous passages were not quoted. Interview excerpts are labelled I1, I2 and I3. The participant

and school names are pseudonyms; the previous school, town, classmates and other potentially identifying details have been removed or generalised.

## 5. Findings

Across the three interviews, Mei constructs a recognisable before-and-after plot. The "*before*" is populated by collective schedules, ranking systems, teachers, classmates and rules. In these episodes, she frequently uses "*we*" and the generic "*you*": "*we started*", "*we have*", "*you must get prepared*", "*otherwise you'll just fail*". The present and future are narrated more often in the first person: "*I can sort of control the pressure*", "*I would definitely choose maths*", "*I probably will learn Further Maths online*". The shift in pronouns does not prove that migration produced autonomy, but it is the grammatical spine of the story she tells.

Mei explicitly marks the temporal transition, living with her mother in Spain is "*much better*", and she says, "*It's easier because I'm not as stressed as before*" (I1). She then provides the evaluative statement around which the later narrative turns "*I'm more controllable, maybe. I can sort of control the pressure*" (I1). In another formulation, she says, "*I think I'm growing up because before ... I became anxious and I didn't know how to respond to it. And right now, I can*" (I1). The phrase "*right now I can*" positions her not as someone freed from difficulty, but as someone newly able to respond to it.

This is not a simple rescue narrative in which China is wholly negative and Spain wholly positive. The earlier field remains present in her habits of self-surveillance, her fear of losing and her association of education with security. The narrative is better understood as one of re-regulation: external pressure becomes more manageable and, in some domains, more self-endorsed, while its emotional traces continue.

### 5.1 An early science self: curiosity, ethics and a pragmatic turn

Mei's earliest science story is one of intrinsic curiosity. Asked about her childhood interests, she answers with an intensifier, "*I loved, I was obsessed with biological things*" (I1). She expands this into a general story of childhood exploration, "*I think every child ... [has] a dream or a passion to explore a new world, to explore creatures or something. But as I grew older, I realised that creatures ... are living [things].*" (I1)

The narrative then turns. Her movement away from biology is not attributed to inability or boredom, but to ethical and emotional discomfort with harming living organisms. She explains that she did not want to kill living things because the idea felt "*so stressful*" (I1). This is significant because it shows that a change in science aspiration can be value-laden rather than a decline in science identity. Biology remains associated with wonder, but its imagined practices conflict with the kind of person she wishes to be. Engineering enters the story as both practical and provisional, and when asked what she might become, Mei says, "*Maybe an engineer. I think it earns money, that's all*" (I1). When pressed on the importance of money, she adds, "*Yeah, and living. Being able to live*" (I1). The apparent bluntness of "that's all" is modified by "*being able to live*"; the aspiration is

narrated less as wealth-seeking than as a search for economic security. She later gives it more substantive content, "*Maybe I can learn electricity. Or I can learn renewable energy ... something with renewable energy*" (I1).

Her future-oriented language is carefully graded. "*Maybe*" marks engineering and chemistry as open possibilities; "*definitely*" marks mathematics as firmer, "*I would definitely choose maths because I think I'm good at it. Physics, maybe chemistry*" (I1). This combination suggests an emerging STEM identity rather than a settled occupational plan. Science is simultaneously a remembered curiosity, an ethical problem, an area of competence and a route to a viable future.

### 5.2 The Chinese school field: compressed time, public visibility and collective comparison

The longest narrative episode concerns Mei's previous school in northern China. She makes the intensity tellable through time, the day begins at about seven in the morning, includes lessons, meals and supervised study, and can continue until nine or ten at night. Her account accumulates activities rather than summarising them, reproducing the sense of compression, "*I would start like seven ... [and] finish at nine ... We eat lunch in school, dinner in school ... In the morning, when we came to school, we started to read out loudly ... Teachers ... always give tonnes of homework ... [in the evening] we just do homework*." (I2)

The school day is embedded in a larger regime of limited recovery time, "*We don't have weekends ... not every week*," she says, explaining that some weekends were partly or wholly occupied by school (I2). Even the summer holiday was incorporated into competition through extra courses and an immediate return-to-school examination. In her stark formulation, if a student had not made "*an extreme improvement in the summer holidays, you are a loser*" (I2). The second person "*you*" presents this as a rule of the field rather than merely a private feeling.

Scale intensifies the experience; Mei repeatedly returns to the number of students: "*We used to have 64 students*" (I2), and elsewhere explains that air conditioning was indispensable because there were "*64 students in one big classroom*" (I3). The class was streamed by attainment. She was placed in the second-highest group and recalls, "*I was in the second class ... and we competed with the first class ... it's set up [in a] pyramid shape*" (I2). Her evaluation is direct: "*It's very stressful*" (I2). Competition is not only individual, behaviour also contributes to a collective class score; praise, reprimand and the temporary award or removal of a flag publicly represent the group's standing. At the individual level, scores are ordered and displayed: "*They put [students] in order according to the scores ... [with] an arrow up or down ... compared to the last score ... They print them [and] put [them] at the back wall of the whole class, so everyone could see them*." (I2)

This public visibility turns marks into symbolic capital; a score does not simply indicate what has been learned; it determines position, recognition and exposure. Mei contrasts this with her current school, where a grade such as an A summarises performance, and classmates do not necessarily know one another's detailed results. In

China, by contrast, "*if you got 148, then you got 148*" out of 150, and "*they will know*" (I2). The precision of the number is part of the social experience of competence.

### 5.3 "*Saving face*": discipline and the internalisation of pressure

A second mechanism of public visibility appears in Mei's account of discipline, especially in primary school. She says that younger pupils were not treated as full persons, "*When you are younger, they don't treat you as a [human] being ... they just treat you like an item*" (I3). The child is expected to occupy a prescribed bodily position: "*You should be quiet, and you should make no noise. Otherwise, they're going to take you out*" (I3). Misbehaviour could be photographed and shared in a large parent messaging group, where "*almost one hundred persons ... can all see the picture*" (I3).

Mei explains the emotional force of such practices through the cultural idiom of face, "*We lose face ... you have to save face*" (I3). She intensifies its importance as "*super, super important*" (I3). This should not be read as a universal statement about Chinese culture; it is the vocabulary through which Mei interprets her own experience of public evaluation. When asked what motivates people, she replies, "*For me, it should be face ... punishment and reward*" (I3). In self-determination terms, this is a concise account of externally controlled and introjected motivation; behaviour is organised by the threat of exposure, loss of standing and the wish to avoid shame.

The earlier field continues in a small present-day story, during a quiet period at school, Mei had played computer games and immediately narrated the episode through guilt: "*I played too much this morning, so I feel guilty ... I need to work a little bit harder*" (I3). Yet the same exchange contains a counter-position, "*Sometimes you cannot study. After relaxing, you can study a little bit more*" (I3). The juxtaposition is important because guilt appears quickly, but it is now accompanied by a language of rest, limits and self-management that was largely absent from her description of schooling in China.

### 5.4 Science learning under competition: high attainment and precarious competence

Within the Chinese school narrative, science is described less through inquiry or practical work than through curriculum sequence, homework, revision materials and examinations. Mei recalls beginning chemistry later in secondary school and studying "*elements and reactions*", including electrolysis (I2). Her account of how to succeed is procedural: "*It's not that hard because if you keep doing the homework and ... revision books, and you keep doing them, you get high scores*" (I2). Repetition, rather than exploration, is presented as the reliable route to attainment.

In China, Mei chose chemistry, physics and biology alongside compulsory subjects, indicating both broad science participation and confidence, and she also served as a mathematics assistant, collecting work and helping the teacher. The role mattered relationally, "*I think the more you get closer to your teacher, the higher passion maybe you have in the subject*" (I2). However, access to teacher recognition was itself tied to attainment, in a large class, "*if you get a high score, people will remember you, and you can ask questions*" (I2); otherwise, "*the teacher cannot pay attention to you because she already has tonnes of students*"

(I2). Competence and relatedness were therefore mutually conditional, achievement made recognition possible, and recognition could reinforce interest.

Mei explains that in China, she obtained a very high aggregate examination score but missed the threshold for a preferred school by 12 marks. She narrates the result not as near success but as exclusion "*I couldn't [go there]. There are 12 marks, the gap is huge*" (I2). The phrase "*the gap is huge*" shows how field-specific thresholds transform a small numerical difference into a decisive identity event. In China, Mei describes an educational environment in which students who cannot imagine winning disengage, "*If I cannot get a good school, I just don't learn*" (I2). She then explains that "*You have passion for learning, and the environment and the competition are ruining your passion. And you give up gradually ... You start to play video games, you start to watch films, you start to give up*." (I2)

The repetition of "*give up*" turns disengagement into a process rather than a personal defect. Her explanation culminates in a risk-avoidant disposition, "*I don't like [a] competitive environment because of my experience in China. If you don't do well, you feel bad emotionally*" (I2). She continues, "*It's better not to do the thing than to do it and lose it. I don't want to take the risk sometimes*" (I2). The account, therefore, complicates any assumption that competition straightforwardly raises attainment; it may produce work, but it can also make competence contingent, reduce curiosity and render non-participation emotionally safer than visible failure.

### 5.5 Migration as a turning point: family proximity and pressure made governable

While her parents worked in a large city, she lived with her grandmother in a town some distance away and saw her mother roughly twice a month. Support was maintained through video calls, but distance constrained what her mother could do when Mei was anxious. Mei recalls trying to explain that a stressed person "*cannot think clearly*" and that advice alone was not always "*what I want*" (I1). The account presents a mismatch between practical problem-solving and the need for emotional presence.

After moving to central Spain with her family, the relationship is narrated differently. "*It's much better*" (I1), "*we're living in harmony*" (I1), and Mei is "*not as stressed as before*" (I1). Family co-presence becomes a form of relatedness that supports her developing self-regulation. Migration, in this account, is not only movement between school systems; it changes the everyday availability of family support.

Her approach to IGCSE preparation illustrates this change; she does not claim to be free from pressure. Instead, she adjusts her behaviour: "*Before I played more; now I play less, and I study more*" (I1). The statement is deliberately ordinary. Unlike the previous narrative of compulsory twelve-hour days, current examination preparation is represented as a decision about allocating time. The contrast suggests a move from externally imposed regulation towards identified and partly autonomous regulation.

### 5.6 Belonging after migration: connection desired, discounted and deferred

Relatedness is the most internally contradictory strand of Mei's narrative. In describing China, she says, "*I don't think I can find real friendship because everybody is competitive. They*

*compare each other's scores*" (I2). She later states, "*A real friend is very important, but not a rival ... everyone is just your enemy and your rival*" (I1). Friendship is presented as necessary support, but the school field converts potential friends into competitors. She describes being ignored as especially painful, "*It's very sad, being ignored*" (I1), and adds that she did not find the close friend who might have given support.

In central Spain, the form of the problem changes, limited Spanish constrains local social participation, "*It's hard for me to make friends with local people*" (I1). She has Chinese friends and participates in a badminton activity organised through a Chinese immigrant network, providing social capital outside school. At the British school, she notes that many students are themselves migrants "*we're all immigrants*" (I1) but a shared international status does not automatically produce intimacy. Some peers are "*not mean*" but "*just indifferent*"; she says, "*We're not the same type of person ... I don't have the chance [to talk] ... but I don't mind. I'm so chill*" (I1).

The assertion "*I don't mind*" sits uneasily beside her earlier account of the importance of a real friend. This tension becomes sharper when she says that "*making friends is a waste of time*" because school relationships may last only "*one year or two years*" before "*the thread is cut*" (I1). At another point, she concludes, "*Friends are always lost*" (I1). Yet she also says that "friends can be like family" and that "*it depends on the person*" (I3), and she imagines making friends at university, during a career or in a sports club. These are not simply inconsistent answers, narratively, they can be read as a protective devaluation of relationships that have been difficult to secure, alongside a continuing desire for connection.

This ambivalence matters for science education, Mei's continuation with mathematics and physics does not rest on strong peer belonging. Her competence and future goals may compensate, but relatedness remains a potential point of fragility. It also suggests that a student can appear socially self-sufficient, "*I'm so chill*" — while still narrating the absence of close support as consequential.

### 5.7 Autonomy within family support: "*whatever I want*"

Mei's family narrative counters a simple stereotype of directive parental pressure; her mother initially imagined dentistry: "*My mum wants me to be a dentist*" (I1). Mei rejects the suggestion clearly, "*I don't like it ... even though I don't know what I want to be, I already know what I don't want to be*" (I1). The sequence is a strong autonomy claim. Negative certainty, knowing what she will not choose, precedes a fully settled positive identity.

The parental response is described as supportive rather than coercive; her mother said she could do "*whatever I want*" (I1). Mei summarises her parents' stance as, "*They respect all I choose ... They're very warm. They support me*" (I1). Their support is emotionally substantial but institutionally incomplete. "*They have no idea about the new educational system. And they just respect*" (I1). Her mother responds by seeking information online about what Mei can do and how she can help. Thus, family social capital is strong, while knowledge of the British progression system is still being built.

Mei's response to a curricular constraint further demonstrates agency, because Rivers British School does not offer Further Mathematics, she plans an alternative: "*I probably will learn Further Maths online or join an online school*" (I1). The modal "*probably*" acknowledges uncertainty, but the solution is self-initiated. She is not merely choosing from the options the school supplies; she is attempting to expand the field of options through digital and external educational resources.

### 5.8 The British pathway as selective continuity rather than rupture

Mei does not narrate the British system as culturally alien; on the contrary, after a period in a Spanish secondary setting, she says, "*I think [the] A-level or British system is the most suitable for me because it's kind of near to [the] Chinese educational system*" (I1). This sentence is central to understanding why her transition is possible. The British examination pathway preserves features that her prior habitus can recognise, subject specialisation, formal assessment and the high value of mathematics and science, while offering more choice and, in her account, less public comparison.

Her earlier science and examination capital can be converted into IGCSE and A-level planning, but the school does not provide every subject she wants. The current field reduces some forms of pressure without removing high-stakes assessment. Her prior achievement habit supports disciplined preparation, but it also appears in guilt and risk avoidance. Migration therefore produces neither assimilation nor total rupture. Mei carries forward some dispositions, revises others and actively seeks new resources.

### 5.9 Narrative coda: science as capital and a self-authored possibility

Taken together, the interviews construct science in four overlapping ways. It is a childhood space of wonder; a school subject mastered through repetition and examination practice; a form of capital that can secure future options; and an emerging personal pathway through mathematics, physics, engineering and renewable energy. None of these meanings alone defines her attitude. Her aspiration is partly intrinsic, partly ethical, partly pragmatic and partly shaped by a durable expectation that education must lead somewhere.

The dominant narrative movement is from compulsory collective regulation towards qualified self-authorship. In the past, "*you must get prepared every time*" and public scores determine standing. In the present, Mei says she can "*sort of control the pressure*". In the future, she uses the language of choice: "*I would definitely choose maths*", "*maybe chemistry*", "*I probably will learn Further Maths online*". The story remains open, but it is increasingly told in her own first person.

## 6. Discussion

Mei's account demonstrates the value of treating migration as a change of field rather than as the replacement of one culture by another. Her previous school field attached symbolic value to long hours, precise scores, streamed classes, public ranking, collective

reputation and "*saving face*". These practices produced an achievement habitus characterised by vigilance, endurance and close attention to relative performance. When she moves to a British school in central Spain, the rules change, but the dispositions do not disappear. Guilt after leisure and the belief that it may be safer not to attempt something than to lose are traces of the earlier field.

At the same time, her prior capital is not simply a burden; familiarity with demanding science content, revision, examinations and subject specialisation allows her to recognise the British pathway as "*near to*" the Chinese system. This is a form of field fit; her mathematics and science dispositions become convertible into IGCSE performance and A-level planning. Erel's (2010) emphasis on migrating cultural capital is useful here; capital is carried, translated and revalued. Mei's educational resources do not have a fixed value independent of context.

The case also reveals a potential lag between habitus and field; the current school appears to provide more discretion and less public exposure of results, yet Mei's self-evaluation can still operate according to the older logic. Culturally responsive support must therefore attend not only to gaps in knowledge but also to overlearned strategies that once protected success. A high-achieving immigrant student may require permission to rest, take intellectual risks and experience a wrong answer without loss of identity.

A narrow attainment lens would classify Mei as scientifically capable; she selected all three sciences, achieved a high examination score, served as a mathematics assistant and plans mathematics and physics after IGCSE. Yet her narrative shows why competence cannot be inferred from marks alone. In the previous field, a 12-mark shortfall becomes "*a huge gap*"; teacher recognition is available mainly to high scorers, and every result is publicly located within a hierarchy. Competence is consequently relational and unstable; it depends on rank, threshold and visibility.

Self-determination theory helps explain why such competence may not sustain intrinsic engagement. Mastery experiences support motivation when they are accompanied by autonomy and a sense of secure effectiveness (Niemiec & Ryan, 2009). Mei's description of repetition, homework plus revision books equals high scores, indicates efficacy, but not necessarily ownership or curiosity. Her more current plans, especially arranging Further Mathematics beyond the school, reveal competence in reconnecting to personal purpose. The same academic capacity becomes motivationally different when it serves a self-endorsed project.

The continuum of motivation within self-determination theory provides a particularly precise reading of Mei's story. Public reprimand, class scores, flags, and the threat of losing face exemplify external regulation. Guilt after playing games exemplifies introjected regulation; the external evaluator has become an internal voice. The practical value she gives to engineering, earning enough to live securely, resembles identified regulation, because she personally endorses the outcome. Childhood fascination with creatures is closest to intrinsic motivation. Her current plan to choose mathematics, physics and possibly chemistry, and to obtain Further Mathematics independently, shows emerging autonomy. These forms do not replace one another in a neat sequence;

Mei can be intrinsically curious and economically pragmatic; autonomous in subject choice and still guilt-driven in study habits. Her science aspiration is therefore not evidence that pressure has vanished. It is a hybrid motivational configuration in which inherited discipline, future security, ethical preference and personal interest coexist. This finding extends the broad framework of Altunbas *et al.* (2024) by showing that the quality of motivation can change within a continuing science trajectory.

Migration increases one crucial form of relatedness, the shift from video-call support at a distance to "*living in harmony*" in Spain, accompanies Mei's claim that she can manage pressure more effectively. Her parents' willingness to respect her choices provides autonomy support even though they lack detailed knowledge of the British system. The combination is important because families need not possess specialist science capital to support motivation; warmth, confidence and willingness to learn can also enable agency.

In the Chinese school narrative, teachers know and assist high scorers, while other students risk being ignored, similarly Friendship is corrupted by ranking, and "*real friendship*" becomes difficult when everyone is a rival. In Spain, competition is less dominant in the friendship story, but language and perceived indifference create distance. Mei's oscillation between "*friends can be like family*" and "*friends are always lost*" suggests unresolved relatedness rather than indifference to it. This matters because persistence in science can conceal social vulnerability. Mei has sufficient competence and future orientation to continue without strong peer belonging, but the motivational arrangement may be less resilient during setbacks. A trusted science teacher, mentor or collaborative peer group could provide recognition that is not contingent on being the highest scorer. Relatedness should be treated as part of academic support, not as an optional social extra.

The analysis reinforces the importance of separating three objects of attitude: science as a discipline is represented by childhood biological curiosity and by an ethical concern for living things. Science as a school subject is represented by revision books, tests, marks, rankings and the organisation of curriculum. Science as a career is represented by engineering, electricity and renewable energy, evaluated partly through economic security. Mei is positive towards all three in some respects, but for different reasons. This distinction prevents an overconfident reading of her future aspiration; Mei wanting to pursue engineering does not mean that every aspect of school science is enjoyed, just as moving away from biology does not indicate low science competence. Her career story combines interest in physics, confidence in mathematics, rejection of a parent-suggested occupation, concern about livelihood and ethical discomfort with harming organisms, thus demonstrating that science identity is selective and assembled rather than unitary.

The gender dimension is notable but should not be overinterpreted. Mei is a girl who confidently anticipates mathematics, physics and engineering, fields in which girls' post-16 participation can be constrained by recognition and identity processes (Mujtaba & Reiss, 2013). Meis's story shows how a strong STEM trajectory can be built through the

interaction of competence, family autonomy support and a future-oriented narrative, regardless of whether you're a girl or a boy.

Mei's statement that engineering "*earns money*" and enables "*being able to live*" is consistent with what Sikora and Pokropek (2021) call immigrant pragmatism, science is valued for credible occupational outcomes. However, the case does not fit a simple account of parents transferring fixed ambitions to a child. Her mother's preference for dentistry is explicitly rejected, and the family responds with "*whatever I want*". The aspiration is shaped by migration and security, but it is increasingly Mei's own. Nor is there evidence in these interviews for the "*blocked opportunities*" explanation, in which science is pursued primarily to overcome anticipated discrimination. Mei discusses language, cultural difference and social indifference, but she does not frame engineering as protection against discrimination. The most defensible interpretation is a combination of pragmatism, accumulated science capital and self-authored interest, illustrating why frameworks for immigrant aspiration must remain open to case-specific configurations rather than assuming a single migrant motive.

Meis narrative reveals that teachers should investigate students' prior educational histories rather than treating immigrant learners as academically blank or uniformly advantaged. Mei arrives with substantial curriculum knowledge, examination endurance and subject ambition, but also with an aversion to visible failure. Conversations should therefore ask how students learned, how assessment was experienced and what classroom practices supported or undermined curiosity. Furthermore, assessment should communicate progress without reproducing public hierarchies, private, formative feedback, opportunities to revise, and explicit normalisation of error can help rebuild competence as mastery rather than rank. This is especially important for students whose previous field linked mistakes to shame or loss of face. A student achieving high grades should not be taken as evidence that the emotional cost of assessment is low.

Classroom teachers should aim to build relatedness in the classroom. Small collaborative practical groups, stable peer partnerships, mentoring and teacher check-ins can provide recognition independent of top marks. Because Mei's limited Spanish constrains local friendships and her school relationships are described as somewhat indifferent, the school can also create low-risk social spaces that connect academic interests with belonging, such as engineering challenges, environmental projects, mathematics clubs or science-related service activities.

For private schools such as Rivers British School, where Mei attends in central Spain, guidance on post-16 pathways should include families without assuming that parents know the British system. Mei's mother is willing to search for information, and Mei is resourceful enough to consider online Further Mathematics, but the burden of navigation should not fall entirely on the student. Clear bilingual or accessible explanations of subject combinations, external courses, university requirements and science careers can convert family support into usable institutional capital.

It's also important to understand that culturally responsive science education should not reduce culture to examples in a textbook or treat "Chinese education" as a

single essence. Teachers should recognise the specific histories students bring. For Mei, meaningful science education would connect rigorous content with safe risk-taking, genuine inquiry, environmental and engineering applications, and a classroom in which recognition is not conditional on rank.

## 7. Conclusion

Mei's narrative is not a simple story of liking science, nor a simple comparison between a harsh Chinese system and a relaxed British one. It is a story of dispositions travelling across fields, a previous education organised through long hours, public ranking, conditional teacher recognition and "*saving face*" produced both strong science capital and an emotionally costly relationship with competition. In central Spain, family proximity, greater choice and a less publicly comparative field allow pressure to become more governable, but guilt and risk avoidance remain.

Her science trajectory is equally complex. Childhood biological curiosity is redirected by ethical discomfort, while mathematics, physics, engineering and renewable energy become increasingly plausible future identities. The aspiration is pragmatic and connected to "*being able to live*" but also personally chosen. Her parents support that autonomy even as the family learns a new education system. Relatedness remains the least secure dimension, particularly in peer life, and may be important to the durability of her engagement.

Combining self-determination theory with Bourdieu's concepts of capital, habitus and field makes these simultaneous truths visible. Mei can be highly competent yet wary of failure; supported by family yet socially peripheral; intrinsically curious yet economically pragmatic; shaped by an achievement habitus yet increasingly able to say "*I choose*". The contribution of the case lies not in generalising to Chinese immigrant students as a group, but in showing how one young person narrates science education as both inherited pressure and self-authored possibility.

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**Conflicts of interest statement**

I declare no conflicts of interest with this work.

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