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Erasmus Mundus Master in the Psychology of Global Mobility, Inclusion and Diversity in Society

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Department of Social and Organizational Psychology

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Resumo

Este estudo investiga de que forma as Atitudes de Papéis de Género influenciam indiretamente a Motivação Intrínseca, a partir da perspetiva da Teoria da Autodeterminação. Especificamente, analisa-se as necessidades de *autonomia*, *competência* e *relação* são mediadoras deste efeito nos contexto académico e de lazer. Esta abordagem responde a uma lacuna na compreensão de como as crenças de género internalizadas afetam a motivação através da satisfação das necessidades psicológicas. Adotou-se um desenho correlacional transversal para testar modelos de mediação paralela e, de forma exploratória, de mediação em série. Modelos separados foram analisados para os contextos *académico* e de *lazer*, com o objetivo de identificar diferenças contextuais. Os dados foram recolhidos junto de 96 estudantes de uma universidade mexicana, com foco em cursos na área da agricultura. Os resultados indicaram que Atitudes de Papéis de Género mais tradicionais estavam associadas a uma menor satisfação das necessidades, particularmente da competência, o que, por sua vez, previu uma menor Motivação Intrínseca. Verificou-se uma mediação em série através da competência e da autonomia no contexto académico, enquanto que, no contexto de lazer, apenas a competência mediou o efeito. Estes resultados reforçam a importância de Atitudes de Papéis de Género igualitárias para a perceção de si e para a Motivação Intrínseca, e sugerem que se a competência poderá ser um mediador robusto em múltiplos contextos, a autonomia pode funcionar como um mediador dependente, particularmente em contextos normativos como o académico.

Palavras-chave: Motivação Intrínseca, Atitudes de Papéis de Género, Teoria da Autodeterminação, Academia, Lazer, México

Abstract

This study examines how Gender Role Attitudes (GRA) indirectly influence Intrinsic Motivation through the framework of Self-Determination Theory (SDT). Specifically, it investigates whether *autonomy*, *competence*, and *relatedness* mediate this effect in both academic and leisure settings. This addresses a gap in understanding how internalised gender beliefs impact motivation through psychological needs. A cross-sectional, correlational design was employed to test parallel and explore serial mediation models. Separate models were analysed for *academic* and *leisure* contexts to explore contextual differences. Data were collected from 96 students at a Mexican university, focusing on agricultural careers. Results indicated that more traditional GRA were associated with lower need satisfaction, particularly in competence, which in turn predicted lower Intrinsic Motivation. A serial mediation through competence and autonomy emerged in the academic context, while competence alone mediated the effect in leisure. The findings underscore the importance of egalitarian GRA for SDT need satisfaction and Intrinsic Motivation and suggest that, while competence emerges as a robust mediator across contexts, autonomy may function as a context-dependent mediator, particularly in normative settings such as academia.

Keywords: Intrinsic Motivation, Gender Role Attitudes, Self-Determination Theory, Academia, Leisure, Mexico

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Glossary of Acronyms

BPNSNF	Basic Psychological Need Satisfaction and Frustration Scale
CI	Confidence Interval
GRA	Gender Role Attitudes
GRAS	Gender Roles Attitudes Scale
IM	Intrinsic Motivation
IMI	Intrinsic Motivation Inventory
SD	Self-Determination
SDT	Self-Determination Theory

Introduction

What drives people? Feeling motivated has long been identified as the key predictor of whether individuals engage in an activity or not (Guérin et al., 2012). But how does motivation, particularly an intrinsic one, emerge? To feel motivated, individuals need a self-concept that supports the belief that they are competent in what they do, feel capable of achieving their goals independently, and are connected to others in the process. This is the foundation of Self-Determination Theory, proposed by Deci and Ryan (2000b). Self-Determination is seen as essential for personality- and motivation-building and supporting processes of growth (Ryan & Deci, 2019).

To develop a coherent sense of self, humans need inputs from their social environments. Education can play a central role in shaping one's identity, values, and aspirations (Deci et al., 1996). Beyond formal education, personal expression often unfolds in leisure activities or areas of special interest (Leversen et al., 2012). Both contexts can be drivers of Intrinsic Motivation by providing opportunities in which people can act autonomously, feel competent, and build meaningful connections. At the same time, these environments offer stimuli that inform our worldview. Self-perception can be influenced by the feedback we receive from others, which either supports or limits our growth. In particular, stereotypes and stigma can distort our perceptions (Plante et al., 2013).

This study investigates how internalised gender beliefs influence Self-Determination and, consequently, Intrinsic Motivation. Gender Role Attitudes reflect internalised societal expectations about appropriate roles and behaviours for men and women (García-Cueto et al., 2015), which can shape how individuals interpret their experiences and define their capacities. Therefore, the effects of Gender Role Attitudes on Intrinsic Motivation through the satisfaction of the Self-Determination needs will be examined. It further explores how these dynamics unfold across the contexts of academia and leisure, providing insight into context-specific variations.

CHAPTER 1

1. Literature Review

1.1. Intrinsic vs. Extrinsic Motivation

Motivation is the central driver of behaviour across multiple domains, predicting whether individuals engage in and persist with specific actions (Morris et al., 2022). Especially relevant and longitudinal is self-determined or Intrinsic Motivation (IM), which describes interest and engagement with a subject, driven by curiosity, and a desire for mastery (Ryan & Deci, 2000b). IM describes an autonomous motivation that arises from the self, where one finds the engagement with the task itself rewarding (Deci et al., 1989). IM has been repeatedly associated with essential developmental outcomes, including personality development and psychological well-being (Manganelli et al., 2018; Ryan & Deci, 2022; Wehmeyer, 2020). In contrast, controlled or extrinsic forms of motivation, where behaviours are driven by external demands, like punishment or the promise of reward, have not shown the same beneficial effects (Morris et al., 2022; Niemiec & Ryan, 2009). These distinctions make IM a central focus in motivational and behavioural research.

1.2. Self-Determination Theory

Self-Determination theory (SDT) offers a comprehensive framework for understanding the conditions under which IM can thrive. As a metatheory, SDT connects the sense of self to personality development and behavioural regulation (Ryan & Deci, 2022). It posits that individuals have inherent needs that must be satisfied to experience self-determined behaviour. Rather than objective need satisfaction, SDT focuses on personal perceptions of need fulfilment. This highlights how perceived satisfaction of particular psychological needs solidifies the self and guides behaviour (Ryan, 2023). Individuals' perception of their Self-Determination needs has also been linked to actual performance outcomes (Levesque et al., 2004).

In SDT, the three basic psychological needs autonomy, competence, and relatedness are the central pillars required for the development of IM (Deci et al., 1996; Deci & Ryan, 1985). These needs, referred to in this paper as Self-Determination (SD) needs, contribute significantly to psychological health, as they have been associated with well-being, while their frustration has been linked to psychopathology (Ryan, 2023; Sheldon & Niemiec, 2006). The following sections examine the roles of autonomy, competence, and relatedness individually and explore potential interdependencies among them.

1.2.1. Need for Autonomy

The need for autonomy refers to the experience of being the origin of one's behaviour and acting in alignment with one's true self (Ryan & Deci, 2004). It is fulfilled when individuals perceive their actions and outcomes as self-endorsed and experience choice in their behaviour. Among the Self-Determination needs, autonomy was often highlighted as particularly central to IM and received extensive empirical attention (Chirkov & Ryan, 2001; Levesque et al., 2004; Mosanya & Kassie, 2024; Sobieraj & Krämer, 2019). Several studies have reported strong positive associations between autonomy satisfaction and IM across various domains, including education, sport, and organisational settings (Cheon et al., 2012; Leversen et al., 2012; Mossman et al., 2024). Autonomy-supportive environments reliably promoted self-determined, intrinsically motivated behaviour and enhanced the internalisation of external values and goals (Dysvik et al., 2013; Vansteenkiste et al., 2018).

1.2.2. Need for Relatedness

Relatedness refers to the feeling of being connected to others and experiencing a sense of belonging within a group, community or organisation (Ryan & Deci, 2000b, p. 200). Rather than relating to a certain status, it describes the psychological experience of being accepted and supported by others (Ryan & Deci, 2004). Research suggests that IM is more likely to emerge in environments characterised by social connection and meaningful interpersonal relationships (Dysvik et al., 2013). While certain behaviours may be performed in isolation, secure relational contexts enable individuals to deepen their engagement and cultivate personal commitment to an activity (Ryan & Deci, 2000). Although relatedness was long considered a peripheral element within SDT, recent studies have called for greater research attention to the role of relatedness within motivational processes (Cameron & Dutton, 2003; Dysvik et al., 2013).

1.2.3. Need for Competence

Competence in SDT refers to individuals' perception of capability and effectiveness in their environment and tasks (Sobieraj & Krämer, 2019). Rather than reflecting an objective skill level, competence describes the ability to identify and pursue optimally challenging tasks that align with one's skills (Ryan & Deci, 2004). The role of perceived competence has been ambiguous in research. While some studies demonstrated significant effects of perceived competence on IM (Church et al., 2013; Fisher, 1978; Pelletier & Vallerand, 1996), others could not confirm this (Dysvik et al., 2013; Elliot et al., 2018). In the study conducted by Dysvik et al. (2013), the positive effect of competence satisfaction on IM only appeared when perceived job autonomy was also high. This supports research indicating that competence supported well-being only when it is expressed in moments of autonomy (Levesque et al., 2004; Ryan & Deci, 2004). Followingly, Levesque et al. (2004) found that autonomy

enhances perceived competence. These findings position competence as a necessary but not fully independent condition for IM in some contexts and highlight its connection to autonomy within the SDT framework.

1.2.4. Relationships and Interdependencies between Self-Determination Needs

Over time, the theoretical perception and assessment of SDT have evolved. Early work approached the Self-Determination needs as additive and independent in their contributions to IM (Baard et al., 2004; Deci et al., 2001; Gagné et al., 2000; Vansteenkiste et al., 2005). More recent approaches highlight their synergistic potential, suggesting that the effects are investigated in combination (Olivier et al., 2021; Shin & Park, 2022).

Dysvik et al. (2013) were among the first to argue that all three Self-Determination needs must be satisfied simultaneously for IM to occur, rendering each need necessary but not sufficient in isolation. This perspective was supported by findings of studies on the elevated levels of both autonomy and competence at the same time (Jaramillo, 2024; Ryan & Deci, 2019). Further, the concept of balanced need satisfaction where all three Self-Determination needs are fulfilled to a similar degree received attention and partial empirical support. Dysvik (2013), found that Self-Determination need balance correlated with IM, although it did not emerge as a direct predictor. This suggested that while relative balance might contribute, overall satisfaction levels of the Self-Determination needs remained the more robust predictor of IM.Competence appeared to have synergistic qualities in prior research. Its effect on IM often depended on whether autonomy and relatedness were also satisfied (Dysvik et al., 2013; Leversen et al., 2012). This reinforced the earlier notion that competence supported motivation primarily under conditions of high personal control (Fisher, 1978). Despite these findings, most studies continued to assess need satisfaction independently, leaving the complex interactions between needs underexplored.

This discourse informed the current study's hypotheses: Students' IM in academic and leisure settings is higher when their autonomy, competence, and relatedness needs are satisfied. Building on the literature suggesting synergistic effects and interdependencies, this study also explores potential serial pathways between the Self-Determination needs.

1.3. Influences on Self-Determination

SDT posits the robustness of its Self-Determination (SD) needs (Church et al., 2013; Ryan & Deci, 2022). However, their development is highly influenced by social context, and they suggest that "the social context can either support or thwart the natural tendencies toward active engagement" (Ryan & Deci, 2019, p. 17).

Organismic Integration Theory, a subtheory of SDT, addresses the process by which individuals internalise external influences. SDT is grounded in the organismic-dialectical framework, which views individuals as inherently active organisms with tendencies to grow and to integrate new experiences into a coherent self-concept (Deci, 2025; Ryan & Deci, 2004). It proposes that the extent to which external values are integrated into the self depends on the supportiveness of the social environment, particularly in terms of satisfying the SD needs (Ryan & Deci, 2019). This process is called internalisation and refers to a person's ability to incorporate external values into their own set of values (Ryan & Deci, 2000b). The higher their degree of internalisation and integration, the more self-determined their motivation becomes, peaking in IM as its most autonomous form (Vansteenkiste et al., 2018).

This reveals both opportunities and risks: when social environments support the satisfaction of SD needs, individuals are more likely to develop IM. However, if environments undermine autonomy, competence or relatedness, internalisation may potentially distort self-perception (Howard et al., 2024). These socially driven variations in SD need fulfilment will be illustrated in the following sections, focusing on gendered socialisation.

1.3.1. Gendered Influences

SDT posits that the importance of Self-Determination needs satisfaction for motivational processes is universal across genders (Guérin et al., 2012; Ryan & Deci, 2000b). However, empirical findings on gender differences in IM remain inconsistent. Supporting the universality, some research found no significant gender differences in the importance of SD needs for academic IM (Guérin et al., 2012; Turhan, 2020). Other research identified gender differences in gender-typical subjects, such as mathematics or physical education, where boys demonstrated greater motivation in stereotypically masculine subjects (Guay et al., 2010; Schweder & Raufelder, 2021). These effects often failed to persist longitudinally, suggesting that they depend on context-specific influences rather than marking stable gendered differences (Jang et al., 2012). Overall, these findings support the universality of SDT's core concepts, such as the influence of SD needs on IM, across genders. However, they also hint at external context cues that influence Self-Determination, particularly those arising from expectations regarding gender roles, which will be examined in the following.

1.3.2. Gender Stereotypes

Stereotyping frameworks help explain how external expectations shape lived experiences regarding gender. Theories such as Social Role Theory (Eagly, 1997) and Gender Schema Theory (Bem, 1984) support the assumptions of Organismic Integration Theory by suggesting that individuals integrate gendered expectations in their perception. These societal beliefs can influence how Self-Determination needs are perceived, as illustrated in a study by Dardenne et al. (2007), where external evaluations of

competence led to internalisation of these judgements through mental intrusions. There is no indication of research about the possible effect of stereotyping of relatedness, so in the following, gender stereotype frameworks will be applied to the SD needs of competence and autonomy.

1.3.2.1. Stereotyping Competence

The Stereotype Content Model conceptualises group stereotypes along the two dimensions of warmth and competence (Fiske et al., 2018; Morgenroth & Ryan, 2018). According to this model, women are typically perceived as warm but less competent, while men are seen as competent but less warm. These patterns have been observed across cultures (Cuddy et al., 2009). Past studies illustrate the internalisation of these stereotypes across various domains, such as exercise (Chalabaev et al., 2013) and school performance (Plante et al., 2013; Schmader et al., 2004). Stereotypes have been shown to reduce perceived competence in gender-incongruent fields (e.g., girls in STEM), through biased expectations and feedback that undermine both motivation and performance (Chalabaev et al., 2013; Eccles et al., 1990; Schmader et al., 2004). Also, socialisation into specific Latinx gender roles, which often prescribe female subordination and male dominance, was linked to lower self-perceived competence (Piña-Watson et al., 2016; Zambrana & Zoppi, 2002). As a result, women often report lower perceived competence in performance contexts (Sobieraj & Krämer, 2019; Van Tuyckom et al., 2010). In line with SDT, these internalised beliefs intrude on the self-perception of competence and value, ultimately reducing Self-Determination (Dardenne et al., 2007; Taraszow et al., 2024).

1.3.2.2. Stereotyping Autonomy

Autonomy as a central aspect of empowerment can be influenced by gender stereotyping. Women are often discouraged from viewing themselves as autonomous and self-determining (Mosanya & Kassie, 2024). Research argued that women are more likely than men to externalise their achievements, attributing success to external factors rather than personal agency, which can weaken their sense of autonomy (Sobieraj & Krämer, 2019). Benevolent sexist stereotypes, such as the belief that women need protection or guidance, can undermine perceived autonomy and IM in women (Glick et al., 2000). After Shnabel et al. (2016), benevolent sexism also predicted the use of fewer autonomy-promoting and problem-solving strategies, a possible manifestation of behaviour caused by less autonomy self-perception.

Empirical evidence also highlighted structural inequalities in autonomy support. Longitudinal studies have found that male students feel better supported than female students regarding their autonomy at school (Diseth et al., 2018; Jang et al., 2012). This is especially significant, since a buffer for gender stereotyping is education, which demonstrated a significant positive correlation with overall women's autonomy (Schutzenhofer, 1983). These findings demonstrate that autonomy development

is deeply embedded in gendered social structures, and women may face persistent barriers to experiencing and building autonomy satisfaction, particularly in the academic context.

1.3.3. Gender Role Attitudes

Gender Role Attitudes (GRA) refer to an individual's beliefs about appropriate roles and behaviours for men and women (Chalabaev et al., 2013; Wolter et al., 2015). These attitudes are informed by gendered stereotypes and translate them into expectations of gendered behaviour (García-Cueto et al., 2015). Their manifestation can range from egalitarian to traditional views, with individuals with egalitarian views endorsing stereotypical gender norms and expecting gender-stereotypical behaviour less (Pérez Sánchez et al., 2021). Research suggests that more traditional GRA is associated with reduced motivation and competence, while more egalitarian GRA is associated with high IM and performance, particularly in gender-atypical domains (Clément-Guillotin et al., 2012; Koçak et al., 2022; Schmader et al., 2004). Also, individuals with egalitarian GRA are more likely to engage in non-stereotypical activities and develop a stronger sense of competence (Taraszow et al., 2024). Interestingly, these effects are especially pronounced for girls: those with more egalitarian beliefs perform equally well as boys, report greater competence growth, and show increased engagement in counter-stereotypical domains (Ehrtmann et al., 2019; Ehrtmann & Wolter, 2018). This suggests that GRA shape the internalisation of stereotypes and interacts with gender to influence self-perceptions of especially competence as Self-Determination need.

Accordingly, we hypothesise that more traditional GRA are negatively associated with the satisfaction of Self-Determination (SD) needs, autonomy, competence, and relatedness. Further, this study builds on previous research highlighting the role of SD needs in fostering IM (Dysvik et al., 2013; Levesque et al., 2004) and extends this approach by investigating the mediating role of SD needs in the relationship between GRA and IM. Existing research suggests that GRA can influence the perception and internalisation of competence, autonomy and relatedness (Schmader et al., 2004; Ehrtmann & Wolter, 2018). For instance, Plante et al. (2013) suggested that students' competence beliefs mediate the link between gendered stereotypes and their academic career intentions. In line with this, SD needs have been examined as mediators in motivational processes (Shin & Park, 2022). This study adopts this mediation approach to investigate whether GRA influence IM through the SD needs autonomy, competence and relatedness (Chalabaev et al., 2013; Guérin et al., 2012; Rozek et al., 2015).

1.4. Context

Self-Determination Theory (SDT) posits that the needs of autonomy, competence, and relatedness are universal and can be identified across cultures. However, their satisfaction is likely to be shaped not only by cultural conditions but also by the normative or non-normative nature of the context in which behaviour occurs (King et al., 2024). Competence beliefs, in particular, show substantial context dependency, since competence perceptions rarely generalise across domains. A person may, for example, feel capable in artistic pursuits but insecure in athletic or mathematical contexts (Sobieraj & Krämer, 2019; Taraszow et al., 2024). These different perceptions of need satisfaction can influence motivational processes differently across contexts.

The following sections first examine the cultural transcendency of SDT, focusing on the cultural peculiarities in the present research in the Mexican higher education context. Secondly, the differences that persist across both academic and leisure settings will be analysed, tapping into their characteristics of structure and regulation.

1.4.1. Cultural Transcendence

The claim that Self-Determination needs are universal across all cultures has been the subject of considerable debate (Church et al., 2013). While relatedness is widely recognised as a universally relevant need, autonomy has been criticised as a predominantly Western concept, rooted in values of individualism and self-direction, that may be less emphasised in collectivist cultures (Chirkov & Ryan, 2001). Cross-cultural frameworks have identified cultural variation in the conceptualisation and importance given to autonomy and self-direction (Hofstede, 2007, 2011; Schwartz, 2012). These findings raise questions about whether autonomy as SD need is perceived similarly and has the same effects across different cultural contexts. While competence may also hold cross-cultural consistency, it remained ambiguous within the cultural debate (Church et al., 2013). Although it has not been explicitly problematised as being either bound or transcendent by culture, it is still shaped by cultural expectations, particularly about who is expected to be competent in which areas (Levesque et al., 2004). In summary, while SDT posits cultural universality that could be supported in studies, the perception, importance and mechanisms surrounding SD needs are shaped by cultural context (Church et al., 2013). In the investigated Mexican context, values close to relatedness and marianismo, a focus on family and spirituality, and may stress the need for relatedness (Piña-Watson et al., 2016). Also, in Mexico, strong authority structures and hierarchical family dynamics persist, which suggest more pronounced differences between normative and non-normative contexts (Hofstede, 2007; Martínez & Rebolledo, 2015).

1.4.2. Academic Context

The university and broader educational context have been extensively examined on how Self-Determination needs shape students' motivation, performance, and development (Chirkov & Ryan, n.d.; Diseth et al., 2018; Jang et al., 2012; Niemiec & Ryan, 2009; Nishimura & Joshi, 2021; Olivier et al., 2021; Schmader et al., 2004; Sobieraj & Krämer, 2019; Trouilloud et al., 2006; Wolter et al., 2015). Compared to leisure settings, academic environments are characterised by heightened environmental pressures, including performance evaluations, like grading, and social expectations (Levesque et al., 2004; Skewes et al., 2018).

A key distinction in applying SDT in academic settings is the extent to which students experience self-direction. The structure of university programmes and the academic culture limit students from making autonomous choices (Howard et al., 2024; Levesque et al., 2004). Nevertheless, research demonstrated that especially autonomy-supportive environments, where students are encouraged to make meaningful choices and express their perspectives, foster greater IM (Diseth et al., 2018; Levesque et al., 2004; Ryan & Deci, 2000a). As a normative and hierarchical setting, institutions can either mitigate or exacerbate the effects of gender stereotypes and environmental pressures through institutional policies and interventions. Commonly used are mentorship programmes, women in STEM initiatives, or inclusive pedagogies (Dasgupta & Stout, 2014; Skewes et al., 2018). These efforts aim to increase students' and staff's perceived autonomy and competence.

Social influence plays a pivotal role in shaping students' motivation within the university context. Informational feedback from the teaching body and family members can significantly affect students' sense of autonomy and competence, with internalisation processes potentially mediating the development of IM (Deci et al., 1996; Levesque et al., 2004). Persistent gendered beliefs and gatekeeping, reinforced by internalised and normalised stereotypes among men, further hinder women's progress in academia (Lizama & Valdés, 2023; Masinire & Sanchez-Cruz, 2020). Another manifestation offers research in STEM: maternal expectations have been shown to influence performance and persistence, often reinforcing gendered limitations and lowering girls' perceived competence (Rozek et al., 2015). As a transitional space between education and professional life, stereotypical beliefs about which fields are appropriate for men or women diminish confidence, and with that IM, and increase the likelihood of students changing field of study or leaving specific fields altogether (Schmader et al., 2004; Skewes et al., 2018). While female enrolment in higher education in Mexico has surpassed that of men in recent years, significant barriers to advancement persist (Instituto Nacional de Estadística y Geografía (México), 2023). Women continue to be underrepresented in higher education and research positions (Espadas & Galaz, 2023; Maheshwari et al., 2025).

In summary, the academic sector functions as a highly normative context characterised by external feedback that mostly informs students' competence (through grading or gendered expectations) and then autonomy (through informational feedback and treatment). This makes the Mexican higher education context particularly interesting for SDT research. Additionally, the university context studied here is particularly shaped by a STEM focus on agriculture and engineering, with notable gender disparities in enrolment across fields (*Instituto Tecnológico Del Valle De Morelia*, 2022).

1.4.3. Leisure Context

Leisure represents a less normative and broader context than formal education. Prior SDT research in leisure tended to investigate certain domains, such as music (Krause et al., 2019; MacIntyre et al., 2018) or sports (Amado et al., 2015; Burkhalter & Wendt, 2001). In a review by Teixeira et al. (2012), SDT was confirmed to improve the understanding of exercise behaviour, and competence was identified as a key factor for IM in sports. While there is no general investigation of leisure activities through the framework yet, Leversen et al. (2012) researched leisure in a broader set-up of four activity groups (team sport, individual sport, music and art and civic activity participation) and found overall high levels of perceptions of competence and relatedness in leisure activity participation. Notably, girls' IM was more strongly linked to perceptions of relatedness; an effect that could not be replicated within the boys' cohort.

Despite the autonomy typically associated with leisure, which allows individuals to self-select activities, gendered norms continue to shape participation patterns. These gendered norms also persist in public spaces in Mexico (Martínez & Rebolledo, 2015; Schroeder et al., 2019) and influence leisure choices (e.g., women avoiding "masculine" hobbies) and relatedness dynamics (e.g., exclusion from male-dominated spaces) (Taraszow et al., 2024). Conversely, more female-connoted domains such as languages, arts or social activities are more strongly associated with liberal values like autonomy and self-expression (Ehrtmann et al., 2019; Krause et al., 2019).

In summary, competence, autonomy, and relatedness have all been shown to be relevant predictors of IM in specific leisure areas. In this study, following and extending Leversen (2021), we will aim to examine leisure contexts from a more global perspective, focusing on individuals' subjective perceptions. In line with SDT, participants in this study are free to define and report what constitutes leisure for them, without predefined activity categories.

1.5. Research Plan

This study investigates the relationship between Gender Role Attitudes (GRA), Self-Determination (SD) need satisfaction, and Intrinsic Motivation (IM) in academic and leisure contexts. It builds on Self-Determination Theory (SDT), which identifies autonomy, competence, and relatedness as the core needs supporting IM. While previous research has examined gender differences and the influence of gender or gendered stereotypes on motivation, the role of individuals' GRA remains understudied.

A key contribution of this research is the dual-context approach. By investigating the two contexts, leisure and academia, this study aims to identify contextual differences in IM building. Notably, the self-defined leisure approach extends prior leisure research, allowing for a more inclusive analysis. Focusing on a specific student body at the Instituto Tecnológico del Valle de Morelia, Mexico, the study results hope to support the development of evidence-based interventions at the university.

Firstly, we expect that higher satisfaction of the Self-Determination (SD) needs is associated with higher IM in both contexts, replicating most SDT literature (Baard et al., 2004; Church et al., 2013; Deci et al., 2001; Manganelli et al., 2018; Moser, 2022). Second, we hypothesise that more traditional GRA are negatively associated with the satisfaction of the SD needs, autonomy, competence, and relatedness, in both academic and leisure contexts, with exploratory interest in whether the strength of this association varies by context. Third, we propose that in the academic context, the relationship between GRA and IM is mediated by perceived academic autonomy, competence, and relatedness, such that more traditional GRA are associated with lower levels of need satisfaction, which in turn predict lower IM. Fourth, we hypothesise a similar mediation pattern in the leisure context, in which more traditional GRA are associated with lower perceived leisure competence, autonomy, and relatedness, which then predict lower IM. The strengths of these mediations will be explored. Finally, we explore a potential serial mediation in both contexts, whereby the relationship between GRA and IM is mediated sequentially through their respective perceived competence and then autonomy.

CHAPTER 2

2. Methods

2.1. Sample

The sample comprised students from the Instituto Tecnológico del Valle de Morelia, which has 1,167 students (*Instituto Tecnológico Del Valle De Morelia*, 2022), of which around 10% participated in the study (n = 124). To meet the inclusion criteria, participants had to be over 18 years of age, enrolled in a program at the Instituto Tecnológico del Valle de Morelia in Morelia and of Mexican origin. Data collection was conducted by distributing an online survey to the class groups and was supported by the teaching personnel at the institution from February to April 2025. The survey was executed in Qualtrics, and all data was handled anonymously. All participants provided their consent prior to participating voluntarily and were aware that they could withdraw from the survey at any time. There was no compensation for participation in the study. Procedures were in accordance with the ethical standards of the American Psychological Association, approved by the local ethics committee at the Instituto Universitário de Lisboa (see in the appendix).

The data required extensive cleaning: participants who did not respond fully to the SDT part of the questionnaire items were excluded from further analyses (*n* = 28). This was done to ensure the reliability of computed scale scores and to reduce potential bias introduced by incomplete responses. With the final dataset (*n* = 96), the study was underpowered according to the a priori power analysis conducted.

Of those included in the analysis, 62.5% of participants were men, 35.1% were women, and 2.1% preferred not to disclose their gender. This corresponds closely with the gender distribution at ITVM (*Instituto Tecnológico Del Valle De Morelia*, 2022). The participants' ages ranged from 18 to 39 years old. See Table 2.1 for an overview of the sociodemographic data on gender, age, subject of study, and years of study.

Table 2.1 Sociodemographic characteristics of the sample.

Variable	*n*	%	M	SD	Range
Gender					
Female	34	35.1			
Male	60	62.5			
Other	0	00.0			
Prefer not to say	2	2.1			

Subject of Study					
Engineering in agronomy	74	82.2			
Sustainable agricultural innovation engineering	5	5.6			
Forestal engineering	10	11.1			
Administration	1	1.1			
Age			21.3	3.0	18 - 29
Years of Study			3.3	0.2	1-7

All questionnaires were translated from English to Spanish in forward- backward translations by psychologists fluent in Spanish and English. The researcher edited the back-translated version of the scales in discussion with the translators. Through these procedures, it was attempted to maximise the linguistic equivalence of the measures (Chirkov & Ryan, 2001). All instruments are listed in the appendix.

The voluntarily reported leisure activities reflect a strong dominance of agriculture and nature-related activities (*n* = 19), followed by sports (*n* = 13) and music, arts and culture (*n*=9) and can be seen in Table 2.2. Some activities (e.g. horseback riding) appear across multiple categories but were only counted once per participant. This distribution highlights how the sampled population is closely tied to agriculture and rural life in both academic and leisure contexts.

Table 2.2 Leisure activities of the sample.

Category	Examples	*N*
Sports	Football, basketball, gym, horseback riding, running, training	13
Music, Arts and Culture	Dance, reading, writing, music, cinema, general study	9
Civic Activity Participation	Social interaction, meeting peers, curiosity, personal growth	5
Agriculture and Nature Activities	Agronomy, forestry, animal care, horseback riding, tree cutting, fieldwork	19
Total		46

2.2. Basic Psychological Need Satisfaction and Frustration Scale

The Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) is a self-report instrument designed to measure the self-perception of autonomy, competence, and relatedness. It has 24 items, comprising 8 items per need, of which 4 address need satisfaction and 4 address need frustration. The BPNSFS items are ranked on a 5-point Likert scale, ranging from 1 (not at all true) to 5 (totally right). The BPNSFS has been adapted for both contexts and answered by the participants twice. Following scholars, the need satisfaction and the need frustration of each separate need were then combined to create an overall need score (Campbell et al., 2015; Chen et al., 2015). This process provided 6 composite variables: academic competence, relatedness and autonomy and leisure competence, relatedness and autonomy. Throughout this study, we will refer to the scores with this wording. The BPNSFS has demonstrated good psychometric properties in terms of internal consistency and test-retest reliability (Chen et al., 2015) and has previously been used and successfully validated in Latin-American contexts (Del Valle et al., 2018; Vergara-Morales & Del Valle, 2021; Zamarripa et al., 2017). In the present study, the BPNSFS subscales demonstrated Cronbach's alpha coefficients ranging from $.61 < \alpha < .82$, indicating acceptable to excellent internal consistency. For subscales with comparatively lower reliability, item-total correlations were nonetheless acceptable, and the subscales were retained in their original form based on theoretical relevance and prior empirical use.

The scale was translated into Spanish, drawing from Chen et al. (2015), and adapted for two contexts: university and leisure. An existing version of the BPNSFS in Estonian was consulted for the content of the leisure context (Tilga et al., 2018). Additional control questions were included in the BPNSFS regarding the participant's chosen leisure activity. These questions aimed to specify what the hobby was and to determine whether it was challenging to identify a hobby, if the hobby required special expertise on a Likert scale from 1 (not at all true) to 5 (totally right).

2.3. Intrinsic Motivation Inventory

The Intrinsic Motivation Inventory (IMI) is a widely used self-report instrument designed to assess Intrinsic Motivation, developed by Ryan (1982). Here, only the subscale measuring *interest/ enjoyment* of the IMI is used, which can be used independently (Intrinsic Motivation Inventory, 2025). It consists of 7 items that evaluate the motivation to perform behaviour and participants' emotional experience related to the target activity. Its items are ranked on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The IMI was adapted for both academic and leisure contexts and was translated following the BPNSFS' principles. The IMI has been used and validated in various disciplines and countries (Cordeiro et al., 2022; Heindl, 2020; McAuley et al., 1989; Plant & Ryan, 1985; Rodriguez

et al., 2017). The scale demonstrated strong internal reliability, with Cronbach's alpha coefficients of α = .85 for the academic context and α = .84 for the leisure context.

2.4. Gender Role Attitudes Scale

The Gender Roles Attitudes Scale (GRAS), developed by García Cueto et al. (2015), was developed and validated in Spanish in a Spanish population. It contains 20 items on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), assessing Gender Role Attitudes from a theoretical perspective on gender equality. The authors report that the instrument is more reliable in the central values of the total score distribution (García-Cueto et al., 2015). The scale features a single bipolar factor, with lower scores indicating more egalitarian attitudes, and higher scores reflecting more traditional attitudes. The factor for stereotyped attitudes comprises 14 items, while the factor for egalitarian attitudes includes 6 items. The GRAS has been utilised and validated for several populations, including the Mexican (de la Villa Moral-Jiménez et al., 2025; Pérez Sánchez et al., 2021; Piñeros Pérez, 2023). The scale demonstrated strong internal reliability, with a Cronbach's alpha coefficient of .89.

CHAPTER 3

3. Results

3.1. Analysis Strategy

Statistical analyses were performed using the IBM Statistical Package for Social Sciences (SPSS) version 29. Correlations were calculated between all variables of interest (sociodemographic and model variables) to examine the pattern of association and determine potential confounding factors for the mediation models. T-tests were used to determine gender differences in the scores. The mediation analyses were conducted using the IBM SPSS PROCESS Macro (Version 4.3; Hayes, 2025) to examine whether the association between Gender Role Attitudes and Intrinsic Motivation was mediated by the Self Determination needs autonomy, relatedness and competence, in the academic and leisure context. The significant mediators of the parallel mediations were subsequently considered in a more holistic model: a possible serial mediation model with competence and autonomy as mediators for both contexts was explored. Using PROCESS allows for the determination of the direct and total effects of the independent variable on the dependent variable and calculates the standardised coefficients for improved comparison of the effects' magnitudes. The model parameters were set to 95 % confidence intervals and a 5,000-bootstrap sample.

3.2. Descriptive Analyses

Anomaly detection identified one case with an anomaly index above 2.0. Upon inspection, this case exhibited atypical response patterns but was not likely to be caused by data entry errors, as it represented genuine values and was therefore retained.

An independent samples t-test was conducted to examine gender differences across GRA, IM, SD needs and control questions about leisure (see Table 3.1). There were no significant gender differences in IM in academic settings, $t(92) = -0.02$, $p = .99$, $d = -0.01$, or leisure settings, $t(92) = 0.45$, $p = .65$, $d = 0.10$. Similarly, no significant differences were found in autonomy, relatedness, or competence satisfaction in academic or leisure contexts (all $p > .12$, all $d < 0.34$). However, a significant difference emerged in GRA, $t(82) = 2.56$, $p = .01$, $d = 0.59$, with men reporting more traditional GRA than women.

Table 3.1 T-test by Gender

Logistic parameter	*Men*		*Women*		*t*(92)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
IM in academia (A)	5.20	1.08	5.21	1.13	-.02	.99	-0.01
IM in leisure (L)	5.40	1.14	5.29	1.19	.45	.65	0.10
Autonomy (A)	7.00	1.74	6.69	1.74	.84	.40	0.18
Relatedness (A)	6.67	1.71	6.72	1.92	-.15	.88	-0.03
Competence (A)	7.19	2.21	6.42	2.37	1.57	.12	0.34
Autonomy (L)	6.32	1.87	6.03	1.70	.74	.46	0.16
Relatedness (L)	7.09	2.03	7.17	1.95	-.20	.85	-0.04
Competence (L)	7.10	2.30	6.93	2.43	.33	.74	0.07
GRA	2.55	0.73	2.10	0.86	2.56*	.01	0.59
"How easy was it to think about a hobby?"	2.53	1.38	2.39	1.32	.45**	.66	0.10
"Does your hobby require specialised skills or knowledge?"	3.41	1.21	2.88	1.24	1.99**	.05	0.43

Note. *df = 82. **df=90. p-values from two-tailed t-tests. A = Academic context. L = Leisure context

No significant difference was found in the difficulties participants experienced choosing a hobby ($t(90) = 0.45$, $p = .66$, $d = 0.10$). In estimation of the specialised skill or knowledge their chosen leisure activity required, gendered differences were significant with $t(90) = 1.99$, $p = .05$, $d = 0.43$, with men estimating their chosen leisure activity to require more specialised skills. After Cohen (1960), the gendered differences in this control question showed a small effect ($d < 0.5$), whereas GRA showed a medium effect ($0.5 < d < 0.8$).

Pearson correlations were computed to examine the relationships between IM, autonomy, competence, and relatedness in both academic and leisure contexts, GRA, as well as age, and years of study. The presented data, which include means, standard deviations, reliabilities, and correlations for all variables, are included in Table 3.2. As expected, IM was positively and significantly associated with autonomy, competence, and relatedness in both academic and leisure contexts. The SD needs correlated strongly across different contexts (e.g., leisure and academic competence, with $r = .76$, $p = .01$). This supports the coherence of the SDT framework in different contexts.

Table 3.2 Descriptive statistics of all variables.

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. IM in academia (A)	96	5.17	1.12	—	.73**	.57**	.45**	.54**	.51**	.46**	.51**	-.34**	.30**	.22*
2. IM in leisure (L)	96	5.32	1.18	.73**	—	.51**	.41**	.55**	.47**	.46**	.57**	-.48**	.29**	.14
3. Autonomy (A)	96	6.88	1.73	.57**	.51**	—	.58**	.67**	.62**	.53**	.57**	-.34**	.12	.16
4. Relatedness (A)	96	6.65	1.79	.45**	.41**	.58**	—	.60**	.48**	.75**	.61**	-.38**	.16	.11
5. Competence (A)	96	6.89	2.27	.54**	.55**	.67**	.60**	—	.54**	.56**	.76**	-.41**	.22*	.07
6. Autonomy (L)	96	6.22	1.82	.51**	.47**	.62**	.48**	.54**	—	.64**	.58**	-.58**	.19	.13
7. Relatedness (L)	96	7.10	1.98	.46**	.46**	.53**	.75**	.56**	.64**	—	.67**	-.49**	.14	.09
8. Competence (L)	96	7.02	2.31	.51**	.57**	.57**	.61**	.76**	.58**	.67**	—	-.53**	.20	-.03
9. GRA	86	2.40	0.79	-.34**	-.48**	-.34**	-.38**	-.41**	-.58**	-.49**	-.53**	—	-.33*	-.17
10. Age (in years)	96	21.31	3.01	.30**	.29**	.12	.16	.22	.19	.14	.20	-.33**	—	.30**
11. Years of Study (in years)	92	3.29	2.35	.22*	.14	.16	.11	.07	.13	.09	-.03	-.17	.30**	—

Note. *p < .05. ** p < .001. IM = Intrinsic Motivation. GRA = Gender Role Attitudes. A = Academia. L= Leisure

GRA were consistently and negatively associated with IM and SD need satisfaction, particularly in the leisure context, with significant correlation effects of r >.49. This implies that individuals exhibiting more traditional GRA are more inclined to display lower perception of autonomy, competence and relatedness in both contexts. Steiger's z-tests were conducted to test whether these correlations varied according to the academic and leisure context (Steiger, 1980). The correlation between GRA and autonomy was significantly stronger in the leisure context than in the academic context, with z = 3.34, which, after Steiger (1980), indicates a p < .001. No significant difference was found in the correlation between GRA and competence (z = 0.53) and relatedness (z = 1.77), not reaching the 95% significance level of $|z| > 1.96$. Age and years of study showed weak to moderate positive correlations with IM and were therefore, alongside gender, included as covariates in the mediation models.

3.3. Mediation models

To examine whether the effect of GRA on IM is mediated by the Self-Determination needs competence, autonomy, and relatedness, multiple mediation analyses were conducted using PROCESS Model 4 (Hayes, 2022). Initial analyses were conducted to confirm that the analysis assumptions were satisfied. To assess linearity, scatterplots with regression lines were used to illustrate the relationship between the independent variables and the dependent variable. Age, gender (dummy-coded), and years of study were included as covariates in the mediation models. As presented in Table 3.2, there are no correlations between the independent variables (GRA, competence, relatedness, autonomy in both contexts, gender, age, years of study) higher than .76, which suggests the absence of multicollinearity (Fox & Monette, 1992). For better interpretation of the results, the independent, continuous variables have been mean-centred (West et al., 1991). The dependent variables of IM showed excellent skewness results, with -.50 for IM in academic context and -.38 for IM in leisure context, as well as excellent kurtosis with -.15 for IM in the academic context and -.53 in IM in the leisure context, suggesting a high closeness to a normal distribution.

3.3.1. Academic context

Firstly, the mediation model was tested for the academic context. The model accounted for 15.50 % of the variance in IM, with $F(4, 76) = 3.49$, $SE = 0.16$, $p = .01$. The total effect of GRA on IM was significant (b = -0.37, t = -2.38, p = .02), as zero did not fall within the 95% confidence interval (*CI* [-0.69, -0.06]). This suggests that more traditional GRA is associated with lower IM. Notably, the direct effect of GRA on IM (b = .01, t = -0.04, p = .97, 95% *CI* [-0.31, 0.30]) was not statistically significant. The total indirect effect of GRA on IM through the three mediators was significant, with b = -0.37 and a *95% CI* of

[-0.64, -0.14]. The covariates did not indicate significant prediction levels. This suggests that neither gender, age, nor the years of study had a significant effect on IM in this model.

As shown in Table 3.3, GRA was significantly and negatively associated with academic competence (b = -1.32, t = -4.39, p < .001), indicating that individuals with more traditional GRA were more likely to have lower academic competence perceptions. Academic competence, in turn, was significantly associated with IM (b = .15, t = 2.10, p = .04), with individuals with higher academic competence reporting higher levels of academic IM. The analysis further revealed a significant and negative indirect effect of GRA on academic IM through academic competence (b = -0.19, 95% *CI* [-.42, -.04]).

Also, GRA was significantly and negatively associated with autonomy (b = -.81, t = -3.32, p = .01), indicating that individuals with more traditional GRA were more likely to have lower autonomy perceptions. Autonomy, in turn, was significantly associated with IM (b = .21, t = 2.52, p = .01), meaning that individuals with higher perceptions of autonomy were more likely to depict higher levels of IM. The analysis further revealed a significant indirect effect of GRA on IM through autonomy (b = -.17, 95% *CI* [-.35, -.03]).

Table 3.3 Mediation table for academia

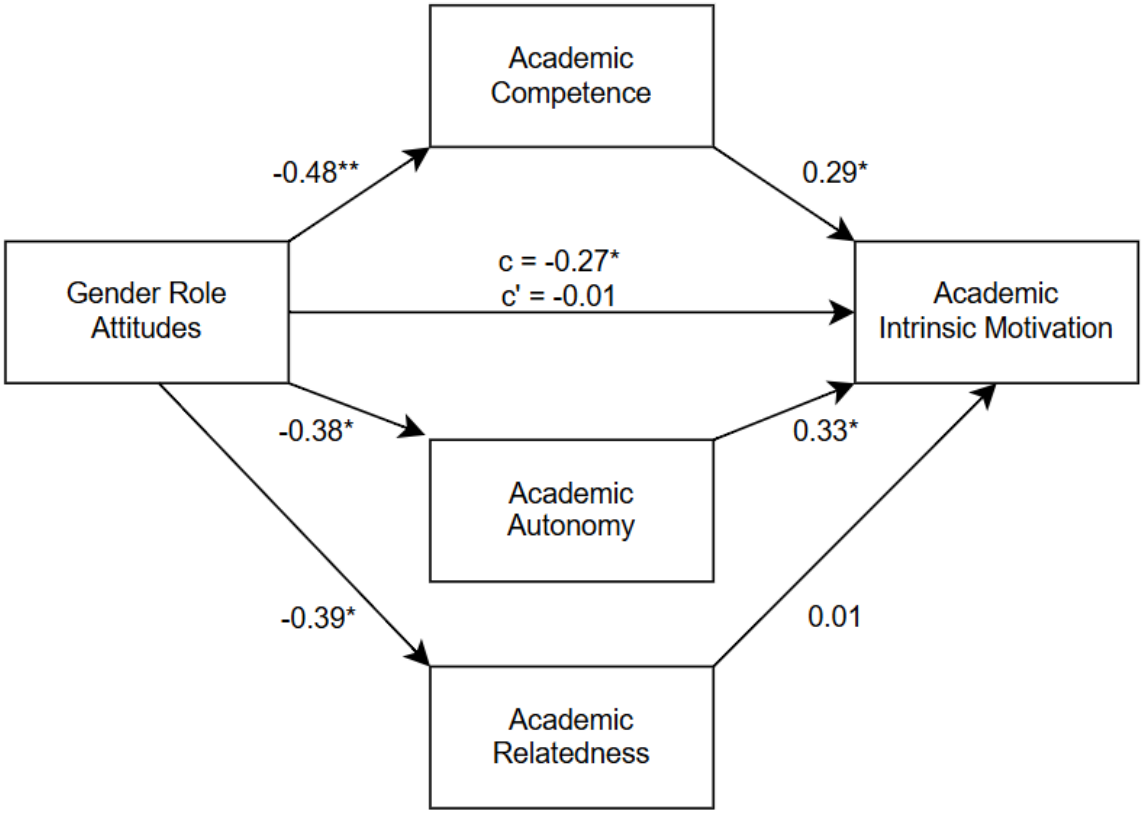
Effect	Coeff.	SE	*t*	95% *CI*		*p*	R^2
				LL	UL		
Mediator variable model: Competence							0.24
GRA	-1.32	0.30	-4.39			<.001**	
Age (covariate)	-0.01	0.11	-0.03			.97	
Gender (covariate)	-1.30	0.48	-2.71			.01*	
Year Career (covariate)	0.05	0.13	0.39			.70	
Mediator variable model: Autonomy							0.15
GRA	-0.81	0.24	-3.32			.01*	
Age (covariate)	-0.07	0.09	-0.85			.40	
Gender (covariate)	-0.63	0.39	-1.62			.11	
Year Career (covariate)	0.13	0.10	1.21			.23	

Mediator variable model: Relatedness						0.16
GRA	-0.86	0.25	-3.40		.01*	
Age (covariate)	-0.05	0.09	-0.50		.62	
Gender (covariate)	-1.30	0.40	-.17		.87	
Year Career (covariate)	0.05	0.11	0.88		.38	
Outcome variable model: Academic IM						0.41
GRA	-0.01	0.15	-0.04		.97	
Competence	0.14	0.07	2.10		.04*	
Autonomy	0.21	0.08	2.52		.01*	
Relatedness	0.01	0.08	0.08		.94	
Age (covariate)	0.05	0.05	1.07		.29	
Gender (covariate)	0.22	0.23	0.96		.34	
Year Career (covariate)	0.08	0.06	1.33		.19	
Indirect total effect	-0.37	0.12		-.64	-.14	
Indirect effect of Competence	-.19	0.10		-.42	-.04	
Indirect effect of Autonomy	-.17	0.08		-.26	-.02	
Indirect effect of Relatedness	-0.01	0.08		-.12	.11	

Note. N = 81. *p = .05. **p<.001. Bootstrapping results for indirect effect.

An indirect effect with relatedness did not prove significant: while GRA was negatively associated with relatedness (*b* = -.86, *t* = -3.40, *p* = .01), relatedness could not be significantly associated with IM (*p* = .94). In total, this supports the presence of a full mediation of GRA on IM through both autonomy and competence in the academic context. The standardised effects of the mediation model can be seen in Figure 3.1. The standardised indirect effect of GRA on leisure IM through competence (*b* = -0.14, 95% *CI* [-0.30, -0.03]) was marginally larger than the indirect effect through autonomy (*b* = -0.13, 95% *CI* [-0.26, -0.02]).

Figure 3.1 Standardised effects of mediation model in the academic context.



Note. *p < .05. **p < .001. c = total effect. c' = direct effect

3.3.2. Leisure context

Subsequently, the same mediation model was tested in the leisure context, where all three mediators, autonomy, competence, and relatedness, were retained to investigate the effect of GRA on leisure IM, including the covariates.

The mediation model accounted for a total of 24.42% of the variance in IM, and the model was significant, with $F(4, 76) = 6.14$, $p < .001$. The total effect of GRA on leisure IM was significant (b = -0.67, t = -4.36, $p < .001$), as zero did not fall within the 95% confidence interval (*CI* [-0.99, -0.37]). Hence, this finding suggests that more traditional GRA is associated with lower IM also in the leisure context. Notably, the direct effect of GRA on IM could not be proven significant (b = -.28, t = -1.46, p = .15, 95% *CI* [-0.66, 0.10]). The total indirect effect of GRA on IM through the three mediators was significant: b = -0.40, 95% *CI* [-0.72, -0.14]. The covariates did not indicate significant prediction levels.

As depicted in Table 3.4, GRA was significantly and negatively associated with leisure competence (b = -1.67, t = -5.78, $p < .001$), indicating that individuals with more traditional GRA were more likely to have lower leisure competence perceptions. Leisure competence, in turn, was significantly associated with IM (b = .17, t = 2.20, p = .03), meaning that individuals with higher perceptions of competence

were more likely to depict higher levels of IM in leisure. The analysis further revealed a significant indirect effect of GRA on leisure IM through competence (*b* = -.28, 95% *CI* [-.52, -.03]).

Also, GRA was significantly and negatively associated with leisure autonomy (*b* = -.81, *t* = -3.32, *p* = .01) and relatedness (*b* = -.86, *t* = -3.40, *p* = .01), indicating that individuals with more traditional GRA were more likely to have lower autonomy and relatedness perceptions in leisure. However, neither the indirect effect of GRA on IM through autonomy (95% *CI* [-.41, .13]) nor through relatedness (95% *CI* [-.23, .19]) proved significant.

Table 3.4 Mediation table for leisure

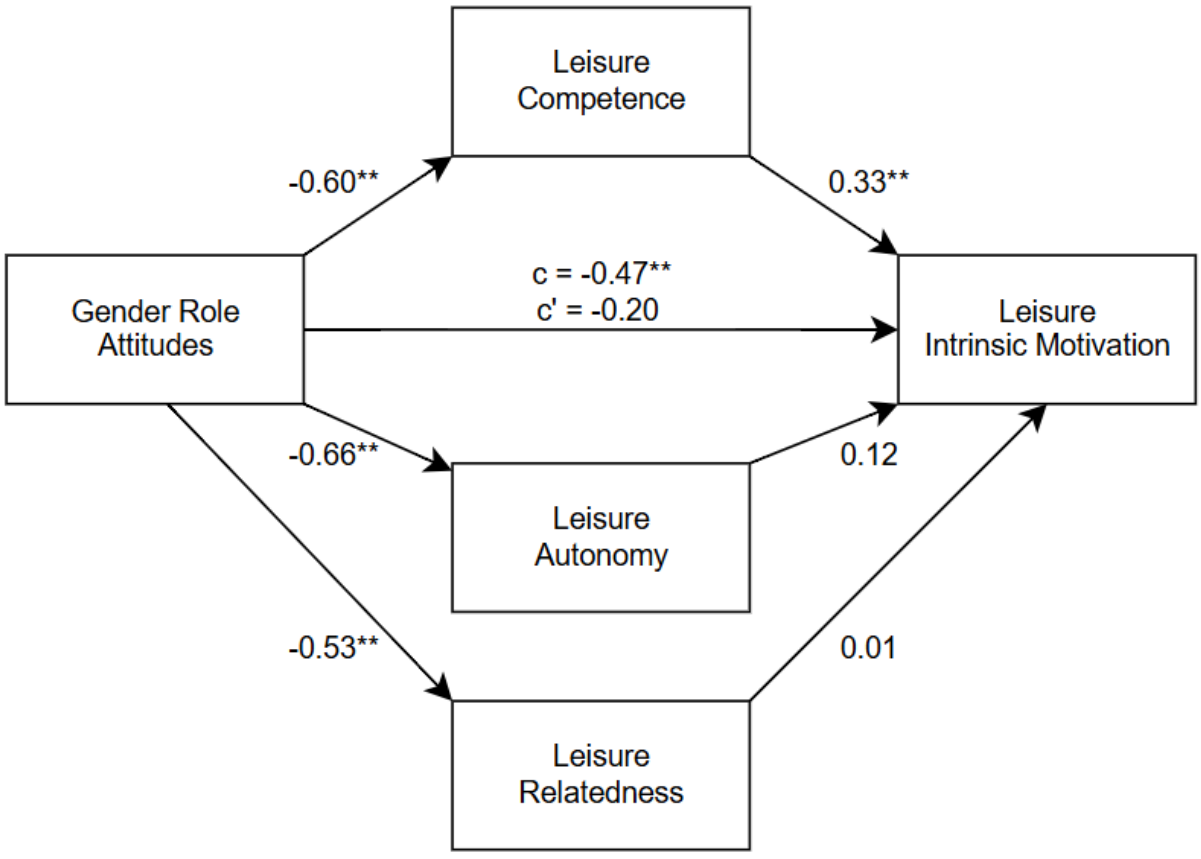
Effect	Coeff.	SE	*t*	95% *CI*		*p*	R^2
				LL	UL		
Mediator variable model:							0.31
Competence							
GRA	-1.67	0.29	-5.78			<.001**	
Age (covariate)	-0.03	0.10	-0.32			.75	
Gender (covariate)	-0.72	0.46	-1.54			.13	
Year Career (covariate)	-0.12	0.12	-1.00			.32	
Mediator variable model:							0.38
Autonomy							
GRA	-1.38	0.21	-6.66			<.001**	
Age (covariate)	-0.04	0.07	-0.55			.58	
Gender (covariate)	-0.58	0.33	-1.77			.08	
Year Career (covariate)	-0.03	0.09	-.29			.77	
Mediator variable model:							0.28
Relatedness							
GRA	-1.30	0.25	-5.01			<.001**	
Age (covariate)	-0.16	0.09	-1.73			.09	
Gender (covariate)	-0.37	0.40	-.88			.38	
Year Career (covariate)	0.18	0.11	1.61			.11	
Outcome variable model:							0.35
Leisure IM							
GRA	-0.28	0.19	-1.46			.15	
Competence	0.17	0.08	0.83			.03*	
Autonomy	0.08	0.10	2.20			.41	
Relatedness	0.01	0.09	0.08			.93	

Age (covariate)	0.06	0.05	1.08		.29
Gender (covariate)	-0.13	0.24	-0.52		.60
Year Career (covariate)	0.02	0.07	0.37		.71
Indirect total effect	-0.39	0.15		-.72	-.14
Indirect effect of Competence	-.28	0.12		-.52	-.03
Indirect effect of Autonomy	-.11	0.14		-.41	.13
Indirect effect of Relatedness	-0.01	0.10		-.23	.19

Note. N = 81. *p < .05. **p<.001. Bootstrapping results for the indirect effect. CI = Confidence Interval. UL = Upper limit. LL = lower limit.

In total, this supports the presence of full mediation of GRA on IM through only competence in the leisure context. The standardised effects of the mediation model can be seen in Figure 3.2.

Figure 3.2 Standardised effects of mediation model in the leisure context.



Note. *p < .05. **p < .001. c = total effect. c' = direct effect

3.3.3. Comparative analysis of the academic and leisure context

Comparisons of the significant mediators and their standardised coefficients offer insights into context differences (Abrar et al., 2024). Both models revealed significant total indirect effects of GRA on IM; however, the specific mediating pathways differed. In the academic context, full mediation occurred individually through the mediators academic competence and autonomy, whereas in the leisure context, only leisure competence was proven to be a significant mediator. Relatedness was not proven to be a significant mediator in either model. Standardised coefficients (see Figures 3.1 and 3.2) show that GRA's negative association with SD needs was overall stronger in the leisure context model. Interestingly, in the leisure context, autonomy appeared to be most negatively influenced by GRA, whereas competence appeared to be most influenced in the academic context. For all mediators proved significant in the two models, standardised coefficients showed similar effect magnitudes on IM. Examining the model fit, the leisure context model accounted for a larger proportion of variance in IM (24.42%) compared to the academic context model (15.50%), suggesting that motivational processes in leisure settings may be more sensitive to the influence of GRA through SD needs.

3.4. Exploratory models

We decided to conduct some exploratory analyses to understand our pattern of findings better. Due to the repeated significance of competence and the singular significance of autonomy, serial mediation models were tested to investigate their joint influence. Given the consistent absence of a mediating effect for relatedness, it was included only as a covariate. SDT and research highlighting the socially shaped nature of competence and autonomy perceptions, along with newer currents in SDT, focus on the synergetic effects of the needs (Dysvik et al., 2013; Sheldon & Niemiec, 2006; D. S. Teixeira et al., 2020, 2023). We exploratively combined the two mediators to determine whether the relationship between GRA and IM could be better understood when competence and autonomy were considered not in isolation, but as dynamically linked in motivational processes. Here, perceived competence may influence autonomy through increased self-efficacy or self-regulatory capacity (e.g., Ryan & Deci, 2002; Jang et al., 2009), which in turn may influence IM.

3.4.1. Academic context

A mediation model was tested in the academic context, where both mediators, competence and autonomy, were controlled to investigate the effect of GRA on academic IM, while also considering covariates to control for age, gender, years of study, and relatedness.

The mediation model accounted for a total of 24.90% of the variance in IM, and the model was significant, with $F(5, 75) = 4.97$, $p < .001$. The total effect of GRA on IM was not significant ($b = -0.20$,

t = -1.22, *p* = .23, 95% *CI* [-0.51, 0.12]), suggesting that more traditional GRA were not directly associated with IM in the academic context. The direct effect of GRA on IM also remained non-significant (*b* = -0.01, *t* = -0.04, *p* = .97, 95% *CI* [-0.31, 0.30]). Nonetheless, the total indirect effect of GRA on academic IM through the two mediators was significant (*b* = -0.19, 95% *CI* [-0.42, -0.03]). This indicates that although GRA had no direct connection with IM in the academic context, it exercised an indirect influence through academic competence and autonomy. Among the covariates, only academic relatedness significantly predicted IM in the total effect model (with *p* = .01), whereas age, gender, and years of study did not reach statistical significance.

As seen in Table 3.5, GRA was significantly and negatively associated with academic competence (*b* = -0.77, *t* = -2.81, *p* = 0.01), indicating that individuals with more traditional GRA were more likely to report lower competence beliefs in academic settings. Academic competence was then positively associated with academic IM (*b* = 0.15, *t* = 2.10, *p* = .04), showing that higher competence predicted stronger IM. The analysis further revealed a significant negative indirect effect of GRA on academic IM through academic competence (*b* = -0.11, 95% *CI* [-0.28, -0.02]), confirming the mediating role of competence in this context.

GRA could not be significantly associated with autonomy (*b* = -0.07, *t* = -0.35, *p* = .73), and the indirect effect of GRA on IM through autonomy as a singular mediator was not significant (95% *CI* [-0.28, 0.09]). However, academic competence was significantly related to academic autonomy (*b* = 0.39, *t* = 4.66, *p* < .001) and in turn academic autonomy was significantly related to academic IM (*b* = 0.21, *t* = 2.52, *p* = .01). The serial indirect effect of GRA on academic IM through competence and then autonomy was significant (b = -0.06, 95% CI [-0.14, -0.01]), suggesting a serial mediation process.

Table 3.5 Serial mediation table for academic context

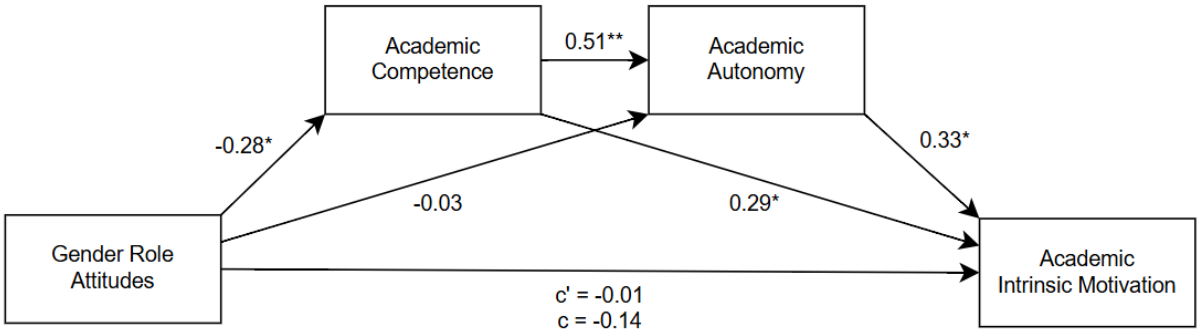
Effect	Coeff.	SE	*t*	95% *CI*		*p*	R^2
				LL	UL		
Mediator variable model: Competence							0.46
GRA	-0.77	0.27	-2.81			.01*	
Age (covariate)	0.03	0.09	0.28			.78	
Gender (covariate)	-1.26	0.41	-3.10			.01*	
Year Career (covariate)	-0.11	0.11	-0.10			.92	
Relatedness (covariate)	0.64	0.12	5.57			<.001**	

Mediator variable model: Autonomy						0.53
GRA	-0.07	0.21	-0.35		.73	
Competence	0.39	0.08	4.66		<.001**	
Age (covariate)	-0.06	0.07	-0.92		.36	
Gender (covariate)	-0.11	0.31	-0.34		.74	
Year Career (covariate)	0.08	0.08	1.03		.31	
Relatedness (covariate)	0.26	0.10	2.60		.01*	
Outcome variable model: Academic IM						0.41
GRA	-0.01	0.15	-0.04		.97	
Competence	0.15	0.07	2.10		.04*	
Autonomy	0.21	0.08	2.52		.01*	
Age (covariate)	0.05	0.05	1.07		.29	
Gender (covariate)	0.22	0.23	0.96		.34	
Year Career (covariate)	0.08	0.06	1.33		.19	
Relatedness (covariate)	0.01	0.08	0.08		.94	
Indirect total effect	-0.19	0.10		-.42	-.03	
Indirect effect via Competence	-0.11	0.07		-.28	-.02	
Indirect effect via Autonomy	-0.15	0.06		-.14	.09	
Indirect effect via Competence and Autonomy	-0.06	0.03		-.14	-.01	

Note. N = 81. *p = .05. **p<.001. Bootstrapping results for indirect effect.

In total, this supports the presence of a full mediation of GRA on academic IM through academic competence and a serial mediation pathway through academic competence and autonomy in the academic context. Figure 3.3 presents the results of the mediation analysis in standardised coefficients. The standardised indirect effect of GRA on leisure IM through competence (*b* = -0.08, 95% *CI* [-0.20, -0.01]) was bigger than the indirect effect through both competence and autonomy (*b* = -0.05, 95% *CI* [-0.10, -0.01]).

Figure 3.3 Standardised effects of serial mediation model in the academic context.



Note. *p < .05. **p < .001. c = total effect. c' = direct effect

3.4.2. Leisure context

A mediation model was tested for leisure, with both mediators, competence and autonomy, being controlled to investigate the effect of GRA on leisure IM, while including the covariates age, gender, years of study, and relatedness.

The mediation model accounted for a total of 29.40% of the variance in IM, and the model was significant, with $F(5, 75) = 6.26$, $p < .001$. The total effect of GRA on IM was significant ($b = -0.48$, $t = -2.74$, $p = .01$, 95% *CI* [-0.82, -0.13]), suggesting that more traditional GRA were associated with IM in the leisure context. The direct effect of GRA on leisure IM remained non-significant ($b = -0.28$, $t = -1.46$, $p = .15$, 95% *CI* [-0.66, 0.10]). The total indirect effect of GRA on leisure IM through the two mediators was significant ($b = -0.20$, 95% *CI* [-0.43, -0.02]). This indicates that GRA exercised an indirect influence on IM through leisure competence and autonomy. Among the covariates, leisure relatedness significantly predicted leisure IM in the total effect model (with $p = .02$), whereas age, gender, and years of study did not reach statistical significance.

As seen in Table 3.6, GRA was significantly and negatively associated with leisure competence ($b = -0.77$, $t = -2.93$, $p = .01$), indicating that individuals with more traditional GRA were more likely to report lower competence in leisure. Leisure competence was then positively associated with leisure IM ($b = 0.17$, $t = 2.20$, $p = .03$), showing that higher competence predicted stronger IM in leisure. The analysis further revealed a significant indirect effect of GRA on leisure IM through competence ($b = -0.13$, 95% *CI* [-0.28, -0.01]), confirming the mediating role of competence in this context.

GRA could be significantly associated with leisure autonomy ($b = -0.73$, $t = -3.38$, $p = .01$), but there was no correlation of autonomy on leisure IM ($b = 0.08$, $t = 0.82$, $p = .41$). The indirect effect of GRA on leisure IM through leisure autonomy as a singular mediator was not significant (95% *CI* [-0.25, 0.07]). Leisure competence was not significantly related to leisure autonomy ($b = 0.17$, $t = 1.94$, $p = .06$), even though close, and the serial indirect effect of GRA on leisure IM through competence and then

autonomy was not significant (b = -0.01, 95% CI [-0.06, 0.02]). In total, this supports the presence of a full mediation of GRA on leisure IM through competence but not autonomy in the leisure context.

Table 3.6 Serial mediation table for leisure context

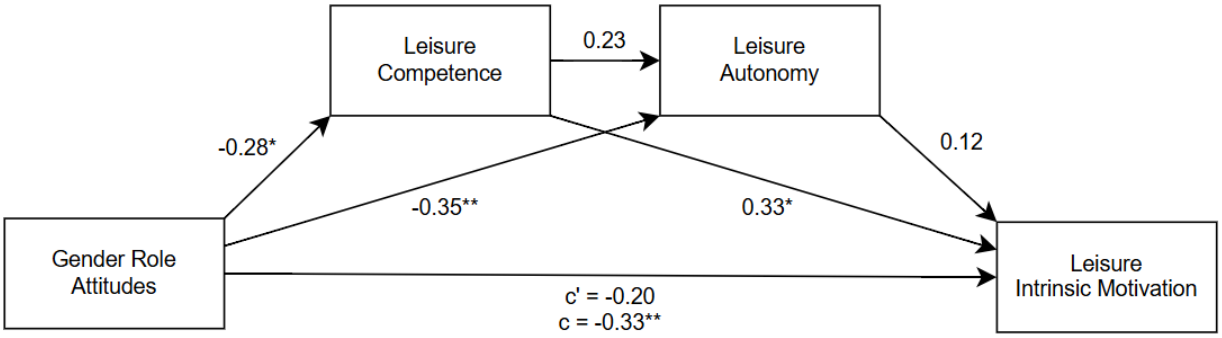
Effect	Coeff.	SE	*t*	95% *CI*		*p*	R^2
				LL	UL		
Mediator variable model:							0.58
Competence							
GRA	-0.52	0.26	-2.93			.01*	
Age (covariate)	0.08	0.08	0.93			.35	
Gender (covariate)	-0.46	0.37	-1.26			.21	
Year Career (covariate)	-0.08	0.10	-2.50			.02*	
Relatedness (covariate)	0.69	0.10	6.87			<.001**	
Mediator variable model:							0.55
Autonomy							
GRA	-0.73	0.22	-3.38			.01*	
Competence	0.17	0.09	1.94			.06	
Age (covariate)	0.01	0.06	0.14			.89	
Gender (covariate)	-0.36	0.29	-1.25			.22	
Year Career (covariate)	-0.05	0.08	-0.66			.51	
Relatedness (covariate)	0.27	0.10	2.73			.01*	
Outcome variable model:							0.35
Leisure IM							
GRA	-0.28	0.19	-1.46			.15	
Competence	0.17	0.08	2.20			.03*	
Autonomy	0.08	0.10	0.82			.41	
Age (covariate)	0.06	0.05	1.08			.29	
Gender (covariate)	-0.13	0.24	-0.53			.60	
Year Career (covariate)	0.03	0.07	0.37			.71	
Relatedness (covariate)	0.01	0.09	0.09			.93	

Indirect total effect	-0.20	0.10	-.43	-.02
Indirect effect via Competence	-0.13	0.07	-.28	-.01
Indirect effect via Autonomy	-0.06	0.08	-.25	.07
Indirect effect via Competence and Autonomy	-0.01	0.02	-.06	.02

Note. N = 81. *p = .05. **p<.001. Bootstrapping results for indirect effect.

Figure 3.4 presents the results of the mediation analysis with standardised coefficients. The standardised indirect effect of GRA on leisure IM through competence was b = -0.09, 95% CI [-0.19, -0.01].

Figure 3.4 Standardised effects of serial mediation model in the leisure context.



Note. *p < .05. **p < .001. c = total effect. c' = direct effect

3.4.3. Comparative analysis of the academic and leisure context

Both models revealed significant total indirect effects of GRA on IM; however, the specific mediating pathways differed. In the academic context, full mediation occurred serially through both mediators academic competence and autonomy, as well as through academic competence individually. In the leisure context, only leisure competence emerged as a significant mediator. Standardised coefficients (see Figures 3.3 and 3.4) show that GRAs' negative association with competence was equally strong in the models. Standardised indirect effects showed that the mediations through competence only show similar magnitudes on IM, whereas the serial mediation in the academic context showed a smaller effect magnitude on IM. Examining the model fit, the leisure context model accounted for a larger proportion of variance in IM (29.40%) compared to the academic context model (24.90%), suggesting that motivational processes in leisure settings may be more sensitive to the influence of GRA through the SD need competence.

CHAPTER 4

4. Discussion

This study examined the effects of Gender Role Attitudes (GRA) on students' Intrinsic Motivation (IM) through students' Self-Determination (SD) needs and compared these effects in academic and leisure contexts. It aims to contribute to a deeper understanding of how internalised gendered beliefs shape Intrinsic Motivation through autonomy, competence, and relatedness. An emphasis was placed on contextual differences, exploring how structured versus self-directed environments interact with need satisfaction. The present findings are discussed considering their theoretical and practical implications, including potential interventions to strengthen students' motivation and reduce the impact of traditional gender role attitudes. The findings will be discussed and integrated into possible interventions in academic and leisure settings to strengthen students' motivation and reduce the impact of traditional Gender Role Attitudes. Lastly, limitations and directions for future research will be addressed.

4.1. Findings

Overall, the results did partially support the proposed hypotheses. The first hypothesis was confirmed: higher satisfaction of autonomy, competence, and relatedness was associated with higher Intrinsic Motivation (IM) in both academic and leisure contexts. The observed associations were moderately strong in both contexts. This aligns with previous research, which has consistently demonstrated a correlation between Self-Determination need satisfaction and IM (Church et al., 2013; Mosanya & Kassie, 2024; Mossman et al., 2024; Pelletier & Vallerand, 1996).

The second hypothesis that more traditional Gender Role Attitudes (GRA) were associated with lower Self-Determination need satisfaction could also be confirmed. To explore the strength difference of the effects in various contexts, a Z-Steiger test indicated that GRA and autonomy had a significantly stronger correlation in the leisure context compared to the academic context. These differences were not observed in either competence or relatedness satisfaction.

T-testing revealed that men scored higher on Gender Role Attitudes (GRA) than women, with a medium effect size. That suggests that men averaged more traditional GRA than women, which supports prior literature (Ehrtmann & Wolter, 2018; Patel & Johns, 2009; Pérez Sánchez et al., 2021). However, there were no significant gender differences in scores of IM or the Self-Determination needs. This dissociation suggests that, although men hold more traditional GRA, they nonetheless achieved similar levels of need satisfaction and IM as women. A possible explanation could be that male students

compartmentalise these perceptions, so that their professed GRA does not necessarily preclude them from experiencing autonomy or competence.

Men also estimated that their chosen leisure activity required more specialised skills than women. This may reflect a gendered framing of competence, whereby men, consistent with their more traditional GRA, select activities with skill-oriented self-perceptions (Eccles et al., 1990; Schmader et al., 2004). Another reason could be that they simply feel more competent in their hobby, which may be offset by the negative effects of GRA. This perception could reflect a confidence bias shaped by traditional GRA, which often associates masculinity with competence and self-assurance. In this sense, the reported skill requirement might not reflect the objective complexity of the activity, but rather an internalised belief in one's ability or the legitimacy of one's chosen hobby. Like prior research highlighted, it would then particularly be women who would be negatively affected by traditional GRA (Ehrtmann & Wolter, 2018; Wolter et al., 2015). In summary, these interpretations support that GRA predicts how individuals internalise and express competence and autonomy, nevertheless.

4.1.1. Mediation Models

The third hypothesis was partially supported: GRA predicted lower academic competence and autonomy, which in turn predicted lower academic Intrinsic Motivation. This supports a full mediation of the association between GRA and academic IM. Academic relatedness did not show significant effect sizes. The two mediators academic competence and relatedness showed similar standardised indirect effect sizes, with a slight tendency for academic competence to be a stronger full mediator for GRA on academic IM. The fourth hypothesis was also partially supported: a fully mediated effect of GRA on leisure IM was found through leisure competence. Leisure autonomy and relatedness did not show significant effect sizes.

Relatedness did not contribute significantly as a mediator in either context or model. While this seems surprising, given that relatedness is often considered the most culturally universal of the SDT needs (Ryan & Deci, 2019), prior research suggests that its contribution is rather nuanced. Specifically, academic context effects have been found for contextualised forms of relatedness, like peer or teacher support (Kaefer & Chiviacowsky, 2021; Zumbrunn et al., 2014), but not for broader measures of relatedness (Xiang et al., 2017). The present findings align with this ambivalence. Although traditional GRA were associated with lower levels of perceived relatedness, this reduction did not translate into decreased IM, as the path from relatedness to IM remained non-significant.

One possible explanation for this is task-relevance: when activities are task-based, students may not perceive relatedness as essential for motivation, even if their broader sense of social connectedness is impacted. That is, traditional GRA may still impede students' self-understanding; however, motivation concerning task execution may not be affected. Additionally, it has been argued

that social connections often serve as sources of external motivation (Leversen et al., 2012). In more interdependent cultures like Mexico (Piña-Watson et al., 2016) relatedness can therefore possibly foster more controlled forms of motivation rather than intrinsic motivation (Dysvik et al., 2013). Although relatedness did not mediate in this model, it remains theoretically central in SDT and should continue to be retained to explore its role in motivational processes (Cameron & Dutton, 2003; Dysvik et al., 2013).

Autonomy has proven significant in the investigated academic models, but not in leisure. This suggests that autonomy serves as a context-dependent mediator for GRA. In structured environments like academia, individuals may feel more constrained by gendered beliefs and evaluation pressures, influencing their sense of autonomy (Howard et al., 2024; Levesque et al., 2004). Additionally, normative settings can increase sensitivity to expectations (Rozek et al., 2015). In contrast, in leisure, the choice of activities may be more self-directed, fostering autonomy. This would suggest that an inherent sense of autonomy in leisure is the reason it does not significantly contribute to the explanation of variance. It is also possible that GRA influences the choice of leisure activity beforehand, since students with more traditional GRA might prefer gender-typical leisure activities (Chalabaev et al., 2013; Clément-Guillotin et al., 2012).

4.1.2. Exploratory Models

Exploratory analyses revealed a serial mediation effect in the academic context: Gender Role Attitudes (GRA) influenced competence, which in turn affected autonomy, ultimately impacting IM. In the leisure setting, this serial effect was not significant. However, in both contexts, an independent mediation effect through competence was supported. The serial mediation models were able to explain a greater variance in the data than the simple mediation models (see Tables 3.5 and 3.6).

Competence emerged as the most robust and consistent predictor of Intrinsic Motivation (IM). This suggests that perceived competence is a strong carrier of the effects of traditional GRA on IM. This is an interesting finding in Self-Determination Theory research, where the effects of competence have been discussed ambiguously: some studies have demonstrated an effect of competence on IM (Church et al., 2013; Niemiec & Ryan, 2009), some only when precedented by autonomy (Dysvik et al., 2013) and other have not at all (Spinath & Steinmayr, 2012). The present findings underscore the prevalence of the effect of perceived competence on IM.

In the serial mediation model in academia, autonomy has only been proven significant when preceded by competence. This finding is contrary to earlier studies that posited an upstream effect of autonomy on competence instead (Dysvik et al., 2013a; Ryan & Deci, 2004), suggesting that autonomy enhances perceived competence through feeling responsible for their (competent) actions first. The present findings suggest a reverse effect, so that in a structured environment like academia, autonomy

may be experienced as conditional: students tend to feel autonomous only after establishing a sense of competence. Autonomy choices in academia may be typically reinforced through competence: after the teachers give positive feedback (enhancing competence), students may be granted more advisory trust (enhancing autonomy). Given that academic systems rely on fixed criteria, the perception of being capable might become a prerequisite for perceiving autonomy. Only when students may feel competent, opportunities for choice (such as topic selection or elective course choice) may become expressions of agency rather than a source of uncertainty. A meta-analysis showed competence to be the strongest predictor of academic motivation, followed by autonomy (Bureau et al., 2022). Together, they can then exert feelings of self-efficacy (Levesque et al., 2004; Miserandino, 1996). Notably, academic motivation could be boosted by increasing competence satisfaction through autonomy support.

These results challenge simplistic additive models of SD need satisfaction and support more dynamic, synergistic models, like those proposed by other researchers (Olivier et al., 2021; Shin & Park, 2022). The observed contextual differences suggest that the hierarchy of needs may shift depending on the environmental structure. In highly normative environments, such as academia or the workplace, autonomy may function as a second-order need, relying on the prior satisfaction of competence. The implications of the findings for the respective context will be discussed in the next section.

4.2. Implications on Contexts

4.2.1. For higher education

Several implications for enhancing Intrinsic Motivation (IM) in the academic context can be derived. In structured and performance-driven environments like higher education, strengthening students' perceived competence should be prioritised. In this study, competence served as a crucial entry point for enhancing autonomy and, subsequently, IM. Supporting students, especially those with traditional Gender Role Attitudes, by stressing early successes could have cascading effects: positive competence beliefs may indirectly enhance both autonomy and IM.

A robust body of research has demonstrated that teacher autonomy support can significantly enhance competence perception (Bureau et al., 2022). Accordingly, teacher-centred SDT interventions are the most popular approach in the academic context (Wang et al., 2024). Hence, teachers framing competence as a foundation for autonomous decision-making (e.g., “You have the skills, so you can choose”) can empower students to engage more self-directedly in academic coursework. Combining the intervention with other theories (Wang et al., 2024), the Situational Leadership model posits that autonomy is not granted universally but should be adapted to an individual’s demonstrated competence (Hersey & Blanchard, 1969). Followingly, beginners benefit from clear guidance and as

their competence grows, autonomy increases. In academic contexts, students then experience autonomy as meaningful once they feel capable of managing choice and responsibility (Hocine & Zhang, 2014).

Feedback culture is another essential component of possible interventions: studies showed that while controlling feedback (e.g., grading), even when positive, undermines IM by limiting perceived autonomy, informational feedback (e.g., individualised feedback in consultation hours) had a positive effect on IM (Levesque et al., 2004; Ryan, 1982). While positive reinforcement is important, minimal monitoring is essential to support and preserve autonomy (Dysvik et al., 2013). Therefore, competence-supportive environments should be paired with autonomy-supportive structures, offering students flexibility and space for expression (Dysvik et al., 2013).

However, addressing Self-Determination needs alone is insufficient. As this study showed, traditional Gender Role Attitudes (GRA) undermine IM by lowering competence and autonomy satisfaction. To mitigate this, interventions should challenge its underlying gender beliefs. Early education plays a critical role in the development of more egalitarian GRA (Cerbara et al., 2022; Du et al., 2021), but interventions also need to be extended into higher education to challenge internalised stereotypes. As Plante et al. (2013) argued that gendered stereotypes are likely to be unrelated to students' performance outcomes if they do not internalise them. Consequently, more effort should be made to promote the idea that even if stereotypes portray a domain as better suited to a specific gender, individuals need not internalise these stereotypes. Faculty training, inclusive curriculum design, and targeted mentorship programs can support these efforts and help mitigate the negative impact of traditional GRA (Aguilar et al., 2024; Hernández Herrera, 2023; Kollmayer et al., 2018). Notably, those inventions should always be designed for the specific sociocultural context in which they are applied (Martínez & Rebolledo, 2015).

4.2.2. For leisure research

The presented findings contribute to a limited body of research on GRA in leisure and within the SDT literature and invite the development of new suggestions to enhance IM. Leisure emerged as the context in which competence carried even more weight than in academia: a full mediation by competence suggests that, in a self-selected context, feeling capable may be the principal driver of IM. This may arise from the understanding that leisure activities are inherently self-selected and culturally embedded, assuming that perceived autonomy and relatedness are naturally high. Then, “being good” in the activity becomes the primary motor of motivation.

Interestingly, the negative correlation between GRA and autonomy was strongest in the leisure domain. While autonomy did not prove as a mediator in the models, this suggests that holding traditional GRA hurts a student’s sense of freedom in their chosen hobbies even more than it does in

academia. It is also possible that GRA has an upstream effect: students with more traditional GRA may avoid autonomy-promoting leisure activities or choose more gender-typical hobbies (Chang, 2017; Freysinger, 2013), which we would not be able to detect in this research. In line with the academic context, this calls for interventions that address traditional GRA to unlock full leisure engagement across all domains.

The investigated population is contextually unique: many students are enrolled in agriculture- or forest-related programs and reported leisure activities were often closely related in interest. This suggests a high level of identity integration, which is an indicator of career commitment and well-being (Hallmann et al., 2022; Stringer & Kerpelman, 2010). Students often live and work on family farms, which allows boundaries between leisure and work to be blurred (Unay-Gailhard & Brennan, 2023). When leisure and career are nearly indistinguishable, need satisfaction in one domain may be likely to reinforce the other. This is supported by our data, which showed only minor mean differences in need satisfaction between contexts. Future research could extend this approach to other populations with high identity integration in leisure and career, such as students in sports academies or conservatories.

4.3. Limitations and future directions

This study aimed to advance research within the SDT framework by exploring the influence of GRA on IM, particularly in understudied contexts such as leisure. The researcher developed context-specific adaptations and translations of established self-perception measures. Self-perception measures will always hold doubt to their potential patterns of social desirability to conform to socially acceptable norms, in this case specifically regarding participants' Gender Role Attitudes. Further, while self-perceptions have been shown to predict motivational outcomes reliably (Ryan, 2023), they do not necessarily reflect participants' actual levels of competence, autonomy, or relatedness. Future studies could benefit from combining objective indicators of performance or behavioural data to assess the overlap and divergence between self-perception and abilities (Cerasoli et al., 2016; Wolter et al., 2015).

This research adopted a focused approach with a small student population. While this approach gave specialised insights, research should now be extended to (Mexican) students to investigate transferability and robustness of the effects. Due to the small sample size, this study was significantly underpowered, which limited the complexity of the model, as it was not feasible to employ and detect potential moderation effects (e.g., those related to gender). The strong indirect effects observed invite a replication of the model with a bigger sample as well as a more thorough investigation of moderated mediation, specifically regarding the interaction between gender, GRA, and Self-Determination needs.

A correlational design was chosen to investigate the underexamined relationships of the SDT framework with GRA, especially within the leisure context. While this approach was appropriate for an

initial investigation, the non-experimental design does not allow causal claims. Further research should move to employ experimental designs to replicate the effects and establish causality. Specifically, manipulating academic competence and autonomy through an intervention would offer interesting insights into how SD satisfaction can mitigate the negative effects that traditional GRA has on academic IM. A subgroup design with varying interventions across supporting students' competence, autonomy, both, or neither would allow researchers to disentangle individual and interactive effects. Ideally, such research would adopt a longitudinal design to observe changes in motivational dynamics over time. Lastly, the results concerning autonomy and its conditional relationship with competence in academia suggest a second-order need in normative environments. Structural equation modelling would be a promising next step to test such hierarchical or interdependent models of need satisfaction further.

4.4. Conclusion

This study explored how Gender Role Attitudes (GRA) influence students' Intrinsic Motivation (IM), using the framework of Self-Determination Theory (SDT). While SDT posits that need satisfaction universally supports Intrinsic Motivation, the findings of this study challenge the assumption that autonomy, relatedness and competence contribute equally or independently across all contexts. Competence emerged as the most robust and consistent mediator. Autonomy proved significant only in the academic context, while relatedness showed no direct effect on IM in either context. More traditional GRA were associated with lower satisfaction of competence and context-dependently - autonomy, which in turn predicted reduced IM.

These findings offer new insights into the development of motivation across different contexts. In normative environments like higher education, autonomy appears contingent on prior competence. In contrast, in self-directed contexts such as leisure, competence alone was sufficient to mediate Intrinsic Motivation (IM). The negative effect of GRA is central to this study: its fully indirect effect on IM through competence and autonomy underscores the importance of addressing internalised gender beliefs.

The practical implications of these findings are multifaceted. In higher education, intervention design could draw from models of situational leadership that recommend gradually increasing autonomy based on competence. Also, enhancing perceived competence through early success experiences, informational feedback, and autonomy-supportive teaching could act as a buffer against the effects of traditional GRA. Promoting critical awareness of gender norms, without reinforcing them, is key to reducing internalisation. Parallel interventions in the leisure domain are also advisable, as addressing traditional GRA could broaden participation across "non-gendertypical" leisure activities.

Taken together, this study contributes to the limited research in SDT regarding contextual differences. It stresses that students' Intrinsic Motivation requires not only structural support for autonomy and competence satisfaction, but also critical engagement with the gendered beliefs that can undermine it, both in and beyond formal education.

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Appendices

Appendix 1. Ethics Approval

COMISSÃO ESPECIALIZADA DE ÉTICA DE PSICOLOGIA

PARECER [Final] **PSI_27/2024**

– Identificação

Projeto nº: PSI_27/2024

Identificação da proponente: Amelie Wendlinger

Identificação do supervisor: Ricardo Borges Rodrigues

Curso: Mestrado em Psicologia da Mobilidade Global Inclusão e Diversidade na Sociedade

Título do Projeto: Gendered Look at Perceived Competence under Self-Determination Theory

Data de submissão do pedido:12 /11/2024

Data do parecer: 06 /01/2025.

– Análise

A informação disponibilizada no *Formulário de Submissão para Apreciação da Comissão de Ética Especializada de Psicologia* e respetivos anexos, **satisfaz os requisitos éticos exigíveis neste tipo de projetos de investigação**, contemplando, nomeadamente:

- O problema de investigação e relevância do estudo; o O(s) objetivo(s) e perguntas de investigação;
- O método, incluindo a caracterização dos participantes e o procedimento de recrutamento;
- Identificação de populações vulneráveis, caso se aplique, e riscos associados à participação e correspondentes medidas de mitigação;
- Os elementos do consentimento informado e *debriefing*;
- A entrega do consentimento informado, do protocolo de investigação (guião de entrevista, questionários, etc.) e do *debriefing*.
- A Declaração de Responsabilidade e de Conduta Ética devidamente preenchida.

Ainda assim, a CEEP sugere particular atenção da equipa de investigação a dois aspectos:

1. Método de recrutamento dos/as participantes: Ainda que a proximidade com o grupo de estudantes seja apontada como uma vantagem (e.g., do ponto de vista do acompanhamento

e suporte durante a realização do estudo), é possível que alguns/algumas estudantes se sintam pressionados a colaborar. Para evitar esta preocupação, recomendamos que apenas seja divulgado o estudo em contexto de sala de aula (e.g., distribuição de panfletos com código QR para o estudo).

2. Relacionado com o ponto anterior, tendo em conta que se trata de um grupo limitado de estudantes é potencialmente possível identificar participantes com base em algumas das suas características (e.g., o/a estudante mais jovem do grupo). Assim, para garantir o anonimato, será importante incluir opção "prefiro não responder" para todas as questões sociodemográficas (e não apenas para o género).

Como recomendações gerais, acrescentamos ainda:

3. Menção ao período de conservação dos dados (e.g., os dados anónimos serão armazenados de forma segura por um período de pelo menos cinco anos, desde o final da dissertação ou, se os investigadores planearem reportar os resultados em publicações científicas, desde a data da publicação original).
4. A CEEP recomenda que os investigadores se certifiquem de que a anonimização é ativada no Qualtrics, de modo a não incluir informação de localização e endereço de IP.

– Parecer

Em suma, assegurados que se encontram a natureza voluntária da participação, o consentimento livre e informado e o *debriefing*, o adequado tratamento dos dados pessoais, entende a *Comissão de Ética Especializada de Psicologia* emitir **parecer final favorável à realização da investigação**.

A relatora,

Marília Prada

Marília Prada

iscte CIÊNCIAS SOCIAIS E HUMANAS

O relator,

J. Eduardo Lourenço

Appendix 2. Informed Consent Form

Esta investigación forma parte de un proyecto de tesis llevado a cabo en Iscte - Instituto Universitário de Lisboa. El objetivo del estudio es entender cómo la motivación y la percepción varían en contextos académicos y de ocio. El estudio está siendo llevado a cabo por Amelie Wendlinger (alwre@iscte-iul.pt), con quien puede ponerse en contacto si tiene alguna pregunta o comentario. El proyecto es supervisado por Ricardo Borges Rodrigues.

Su participación en el estudio, que será muy valorada ya que contribuirá al avance del conocimiento en esta área de la ciencia, consiste en responder a esta encuesta, cuya cumplimentación le llevará aproximadamente 30 minutos. Se le invita a reflexionar sobre sus experiencias en la universidad y durante su tiempo libre, en particular en relación con su afición o actividad favorita. No existen riesgos significativos asociados a la participación en la encuesta.

Para participar en este estudio, usted debe tener al menos 18 años de edad y estar inscrito en el Instituto Tecnológico del Valle de Morelia.

La participación en el estudio es totalmente voluntaria: Usted es libre de decidir si participa o no. Si decides participar, puedes dejar de hacerlo en cualquier momento sin dar ninguna razón. Además de voluntaria, la participación es anónima y confidencial. Los datos recogidos se utilizarán únicamente para análisis estadísticos y no se analizarán ni comunicarán respuestas individuales. No se le identificará en ningún momento del estudio.

“Declaro que he comprendido los fines y objetivos de lo que se me ha propuesto y explicado el investigador, que he tenido la oportunidad de formular todas las preguntas que pudiera tener sobre este estudio y que todas mis preguntas han sido respondidas satisfactoriamente, por lo que acepto participar en el estudio.”

Appendix 3: Questionnaire

3.1. Intrinsic Motivation Academia (IMA-A)

Por favor, piense en cómo se siente al estudiar y elija la opción que mejor describa su experiencia. Use una escala de 1 (totalmente en desacuerdo) a 7 (totalmente de acuerdo).

1. Disfruto mucho mis estudios.
2. Estudiar es divertido.
3. Creo que mis estudios son una actividad aburrida.
4. Mis estudios no pueden mantener mi atención en lo absoluto.
5. Describiría mis estudios como muy interesante.
6. Creo que mis estudios son bastante agradables.
7. Mientras estudio, pienso en lo mucho que lo disfruto.

3.2. Intrinsic Motivation Leisure (IMA-L)

Por favor, piense en cómo se siente praticando su afición y elija la opción que mejor describa su experiencia. Use una escala de 1 (totalmente en desacuerdo) a 7 (totalmente de acuerdo).

1. Disfruto mucho mi afición.
2. Mi afición es divertida.
3. Creo que mi afición es una actividad aburrida.
4. Mi afición no me mantiene atento/a en lo absoluto.
5. Describiría mi afición como muy interesante.
6. Creo que mi afición es bastante agradable.
7. Mientras practico mi afición, pienso en lo mucho que la disfruto.

3.3. Self-Determination in Academia (BNSNF-A)

A continuación, le preguntaremos acerca de sus experiencias en la Universidad (en las ultimas 4 semanas). Por favor, lea cada uno de los siguientes enunciados cuidadosamente. Puede elegir una respuesta entre el 1 (totalmente falso) y el 5 (totalmente verdadero) para señalar el grado en que cada enunciado aplica a usted en la universidad durante las últimas cuatro semanas.

1. En la Universidad siento que tengo la libertad y la posibilidad de elegir las responsabilidades que asumo.
2. Siento que la mayoría de las cosas que hago en la universidad, las hago porque "tengo que hacerlas".
3. Siento que le importo a las personas de mi clase que me importan.
4. En clase, me siento excluido(a) del grupo al que quiero pertenecer.
5. Siento que puedo hacer las tareas bien.
6. Cuando estoy en la Universidad, tengo serias dudas acerca de si puedo hacer las cosas bien.
7. Siento que mis decisiones en la Universidad reflejan lo que realmente quiero.
8. Me siento forzado(a) a hacer muchas cosas que yo no elegiría hacer.
9. Me siento conectado(a) con las personas que se preocupan por mí y las cuales que me importan en mi clase.
10. Siento que las personas de mi clase que son importantes para mi, son frías y distantes conmigo.
11. En la Universidad, me siento capaz en lo que hago.
12. Me siento decepcionado(a) con mi desempeño en la Universidad.
13. Siento que mis decisiones en la Universidad expresan realmente quién soy.
14. Me siento presionado(a) a hacer muchas cosas.
15. En mi clase, me siento cercano(a) y conectado(a) con otras personas que son importantes para mí.
16. Tengo la impresión de que le disgusto a la gente con la que paso tiempo en clase.
17. Cuando estoy en la Universidad, siento que soy capaz de alcanzar mis metas.
18. Me siento inseguro(a) de mis habilidades en la Universidad.
19. Siento que he estado haciendo lo que realmente me interesa en la Universidad.
20. Mis actividades diarias en la Universidad se sienten como una cadena de obligaciones.
21. Experimento una sensación de calidez cuando estoy con las personas con las que paso tiempo en clase.
22. Siento que las relaciones interpersonales que tengo en mi clase son superficiales.

23. Siento que puedo cumplir con éxito tareas difíciles.
24. Cuando estoy en la Universidad, me siento como un(a) fracasado(a) por los errores que cometo.

3.4. Self-Determination in Leisure (BNSNF-L)

Ahora, le pedimos que piense en su tiempo libre y seleccione una afición o hobby que disfrute. Todas las siguientes preguntas se refieren a esta misma actividad. Siéntase libre de tomar un momento para pensar en su afición que le guste más.

A continuación, le preguntaremos acerca de sus experiencias EXCLUSIVAMENTE en su tiempo libre. Por favor, lea cada uno de los siguientes enunciados cuidadosamente. Puede elegir una respuesta entre el 1 (totalmente falso) y el 5 (totalmente verdadero) para señalar el grado en que cada enunciado aplica a usted respecto a su afición elegida.

1. Siento que tengo la libertad de elegir mis actividades
2. Siento que "tengo que hacer", la mayoria de los ejercicios y tareas que hago relacionadas a mi aficion.
3. Siento que le importo a los compañeros de mi afición que me importan.
4. Me siento excluido(a) del grupo al que quiero pertenecer.
5. Estoy seguro(a) que puedo hacer bien mi aficion.
6. Tengo serias dudas acerca de si puedo hacer bien mi aficion.
7. Siento que hago las actividades que realmente quiero.
8. Me siento obligado(a) a hacer actividades que yo no elegiría hacer.
9. Me siento conectado(a) con compañeros de mi afición que se preocupan por mi y quienes me importan.
10. Siento que compañeros que son importantes para mi son frios y distantes conmigo.
11. Me siento capaz en aprender sobre mi afición.
12. Me siento frecuentemente decepcionado(a) con mi desempeño.
13. Siento que la forma en que se enseña mi aficion es como desearía.
14. Me senti presionado a hacer demasiados ejercicios.
15. Siento un sentido de pertenencia con los compañeros que son importantes para mi.
16. Tengo la impresion de que les caigo mal a la gente con la que practico.
17. Siento que soy capaz de alcanzar mis metas.
18. Me siento inseguro(a) de mis habilidades.
19. Siento que las actividades en clase realmente me interesan.
20. Me siento obligado a hacer ciertas actividades y ejercios.
21. Experimento una sensación de calidez cuando estoy con mis compañeros.
22. Siento que mis interacciones con compañeros son superficiales.

23. Siento que puedo cumplir con éxito tareas dificiles.
24. Me siento como un(a) fracasado(a) por los errores que cometo en mi afición.

3.5. Supplementary Questions Leisure

A continuación, encontrará algunas preguntas adicionales para ayudarnos a entender mejor sus elecciones en cuanto a su afición. Puede elegir una respuesta entre el 1 (totalmente falso) y el 5 (totalmente verdadero) para señalar el grado en que cada enunciado aplica a usted respecto a su afición elegida.

1. ¿Le resultó difícil pensar en una afición?
2. ¿Cree que su afición requiere un nivel de experiencia o conocimiento especializado?
3. ¿Se siente cómodo compartiendo cuál es su afición? [Sí/No]
4. Si ha respondido que sí, ¿cuál era tu afición? [Respuesta libre]

3.6. Gender Role Attitudes Scale (GRAS)

Las siguientes afirmaciones describen temas relacionados con los roles de género. Lea cada afirmación cuidadosamente y seleccione el número que mejor refleje su grado de acuerdo o desacuerdo, donde 1 (totalmente de acuerdo) a 5 (totalmente en desacuerdo).

1. Las personas pueden ser tanto agresivas y comprensivas, independientemente de su sexo.
2. Se debería tratar a las personas igual, independientemente del sexo al que pertenezcan.
3. A los niños se les debería dar libertad en función de su edad y nivel de madurez, y no por el sexo de pertenecía.
4. Los chicos tienen las mismas obligaciones de ayudar en las tareas del hogar que las chicas.
5. Las tareas domésticas no deberían asignarse por sexos.
6. Deberíamos dejar de pensar si las personas son hombre o mujer y centrarnos en otras características.
7. El que mi pareja considere que yo soy la responsable de las tareas domésticas me crearía tensión.
8. El marido es el responsable de la familia por lo que la mujer le debe obedecer.
9. Una mujer no debe llevar la contraria a su pareja.
10. Me parece que es más lamentable ver a un hombre llorar que a una mujer.
11. Una chica debe ser más limpia y ordenada que un chico.
12. Es preferible que los puestos de responsabilidad los ocupen los hombres.
13. Creo que se debe educar de modo distinto a los niños que a las niñas.
14. Considero correcto que en mis círculos de amistades se valore más mi actividad familiar futura que la profesional.
15. La principal responsabilidad de un padre es ayudar económicamente a sus hijos.
16. Algunos trabajos no son apropiados para las mujeres.
17. Acepto que en mi círculo de amistades el trabajo futuro de mi pareja se valore más que el mío.
18. Las madres deberían tomar la mayor parte de las decisiones sobre cómo educar a los hijos.
19. Solo algunos tipos de trabajo son apropiados tanto para hombres como para mujeres.
20. En muchos trabajos importantes es mejor contratar a hombres que a mujeres.

Appendix 3. Debriefing

Gracias por participar en esta encuesta. Como se indicó al principio de su participación, la investigación se centra en la autopercepción en el contexto de la universidad y el ocio. Más concretamente, se centra en comprender cómo las actitudes de rol de género afectan al sentido de competencia de los estudiantes universitarios.

Le recordamos los datos de contacto que puede utilizar si tiene alguna pregunta, comentario o si desea que le informemos sobre los principales resultados y conclusiones del estudio: Amelie Wendlinger (alwre@iscte-iul.pt).

Gracias de nuevo por su participación.