

Literary and artistic practices, higher researcher happiness, and no lower scientific performance

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Literary and artistic practices are widespread among researchers, yet their role in academic careers remains poorly understood. This study examines whether engagement in such practices is associated with researcher happiness, how this relationship depends on perceived science–art balance, and whether engagement is linked to lower research performance. We extend research on academic well-being beyond institutional pressures to consider personal creative practices and introduce the concept of science–art balance—distinguishing positive and negative dimensions—to explain how perceived compatibility is related to happiness. Using a two-wave survey of over 2,500 Spanish researchers combined with bibliometric data, we find that broader artistic engagement is positively associated with happiness and is not associated with lower subsequent scientific production or citation impact. These findings suggest that research evaluation and governance arrangements need not treat artistic engagement as professionally risky, as modest recognition of such practices may support career sustainability without undermining scientific performance.

Keywords literary and artistic breadth, happiness, science-art balance, scientific impact, creativity

1. Introduction

In academia, the divide between science and art is often taken for granted. Artistic pursuits such as fiction writing, painting, or music are usually seen as peripheral to the core mission of research, with institutions rarely recognising them in hiring, funding, or evaluation processes. Researchers who engage in such practices may encounter scepticism from colleagues or feel that their creative interests undermine their professional credibility (Chen et al., 2023; Azagra-Caro and Pavone 2024). This enduring separation reflects what has often been described as the institutionalisation of the ‘two cultures’ divide, whereby science and the humanities are treated as fundamentally distinct domains (Snow 1990). Within this framework, academic careers are expected to be highly productive, narrowly focused, and emotionally restrained—leaving little room for self-expression beyond scientific output. These conditions contribute to what some have described as a model of the unhappy but productive academic, raising concerns about the long-term sustainability of research careers (Peiró et al., 2014; De Vos et al., 2020). For policymakers and institutions seeking to support resilient and innovative research systems, these trends raise pressing questions about how career structures and evaluation frameworks affect researcher well-being.

Yet this formal separation contrasts sharply with the lived experience of many researchers. 58% of researchers in Spain report some form of literary or artistic engagement (Azagra-Caro et al.,

2022), and such practices are common even among the most eminent scientists (Root-Bernstein and Root-Bernstein 2013). Artistic and scientific creativity draw on similar psychological traits—such as openness to experience and intrinsic motivation—and even activate shared modes of inquiry and creativity (Feist 1998; Escribano Belmar et al., 2023). Despite their prevalence, artistic activities remain under-recognised in academic settings and are rarely seen as contributing to professional success. This contradiction—between institutional scepticism and widespread personal engagement—raises important questions about the role that creative practices play in academic life and about how science policy can better account for them. This tension reflects broader concerns in science policy about how academics navigate institutional expectations while protecting personal values and autonomy (Carlsson and Johansson Wilén 2024).

Why do so many researchers pursue creative activities that their institutions barely acknowledge? Prior studies suggest that artistic engagement can offer cathartic relief, cognitive stimulation, and opportunities for public communication of science (Belfiore and Bennett 2008; Kidd and Castano 2013; Halpern and Rogers 2021). They may also contribute to regional vibrancy and foster interdisciplinary skillsets increasingly valued in knowledge economies (Siepel et al., 2016; Florida 2019). However, one potential benefit remains underexplored: its relationship with researcher happiness—that is, the experience of joy, contentment, or meaning in one’s professional and personal life (Lyubomirsky 2008). Researcher happiness is not just an individual concern but

also a systemic one: dissatisfaction and burnout undermine innovation capacity and increase attrition from academic careers, with implications for the effectiveness of research systems as a whole.

Despite growing concern over mental health, burnout, and identity fragmentation in academia (Nicholls et al., 2022; Woolston 2018), the literature on researcher well-being has focused primarily on job demands, work-life balance, and institutional pressures (Sabharwal and Corley 2009; Bozeman and Gaughan 2011; Sabharwal 2011; Ryan 2014). Few studies have examined how creative practices outside formal scientific work may contribute to psychological fulfilment. Only rare initiatives, such as art- and nature-based retreats for researchers (Bojner Horwitz et al., 2020), hint at the potential to bridge these domains. To address this gap, we investigate how literary and artistic engagement relates to researcher happiness and whether it is associated with lower research performance.

Drawing on Self-Determination Theory (Deci and Ryan 2000), we propose that creative engagement fosters happiness by satisfying core psychological needs: autonomy, through opportunities for self-directed expression; competence, through the development of artistic skills; and relatedness, through connections to broader cultural and social communities. However, these benefits are not uniform across contexts, as their effects depend on what we call science-art balance—the extent to which researchers perceive their creative and scientific pursuits as compatible or conflicting. Conceptually, science-art balance resembles the notion of affect in psychological research: it can be experienced as either positive, reinforcing identity coherence and professional meaning, or negative, provoking tension, scepticism, or internal conflict (Watson et al., 1988). When creative engagement is viewed as professionally valuable and congruent with one's scientific identity, we expect it to enhance happiness. When it is instead associated with strain or perceived as professionally illegitimate, these benefits may be diminished or reversed.

These dynamics are directly shaped by research governance arrangements. Evaluation criteria, recognition frameworks, and career incentives defined by research ministries, funding agencies, evaluation bodies, and universities signal which activities are legitimate, valued, or risky within academic careers. When literary and artistic practices are excluded from formal recognition, researchers may experience them as professionally costly, even if they are personally meaningful. Conversely, when evaluation frameworks allow space for diverse contributions, creative engagement may be more easily integrated into academic identities, shaping science-art balance and its effects on well-being.

At the same time, a central concern in science policy debates is whether recognising or supporting activities outside formal scientific work entails trade-offs in performance. Time spent on creative activities is often assumed to detract from scientific output or impact, an assumption that underpins narrow evaluation regimes and productivity-oriented incentives. Building on research into dual-domain engagement and cognitive flexibility, we therefore examine whether literary and artistic practices are associated with lower scientific production or impact, or whether they can coexist with sustained scientific performance.

Against this background, the objective of this article is to analyse whether engagement in literary and artistic practices is associated with researcher happiness, with particular attention to the role of perceived science-art balance and the potential implications for research performance. In doing so, this article contributes to two streams of research. First, it extends the literature

on researcher well-being by examining how creative practices outside formal scientific work relate to happiness, beyond the established focus on job demands, work-life balance, or institutional pressures. Second, it connects this literature with research on artistic and literary engagement, which has emphasised personal growth and social value but rarely considered implications for academic careers and research policy. Theoretically, we advance this work by introducing the concept of science-art balance, distinguishing between its positive and negative dimensions in analogy with affect, and examining how perceptions of compatibility between creative and scientific pursuits shape happiness. In this way, we highlight a previously overlooked psychological mechanism through which evaluation regimes and incentive structures influence both researcher well-being and the sustainability of academic careers.

To test these ideas, we use a two-wave survey of more than 2,500 researchers in Spain, enriched with bibliometric data on publication output and citation impact. This study contributes to debates on academic well-being, professional identity, and the role of creativity in research careers, offering evidence that literary and artistic engagement is positively associated with happiness and is not associated with lower research performance.

2. Theoretical framework and hypotheses

This section presents the conceptual framework and hypotheses of the study. We theorise that literary and artistic engagement is related to researcher happiness, shaped by perceptions of science-art balance, and potentially linked to research performance. The model summarising these expected relationships is presented in Fig. 1, after each hypothesis is described in detail.

2.1 Engagement in literary and artistic practices and researcher happiness

Creativity has long been associated with psychological fulfilment, personal growth, and subjective well-being (Forgeard and Mecklenburg 2013; Richards, 2007). Engagement in literary and artistic practices—such as fiction writing, music, or painting—provides researchers with opportunities for self-expression beyond the constraints of formal scientific work. Psychological and health research demonstrates that such activities are linked to stress reduction, resilience, and sustained happiness in general populations (Cuypers et al., 2012; Fancourt and Steptoe 2019; Henriksen and Sawyer 2025). In large-scale epidemiological studies, participation in cultural and creative activities predicts better life satisfaction and reduced anxiety, highlighting that artistic engagement offers durable psychological resources.

Within academic contexts, creativity has usually been discussed in terms of innovation and output (Feist 1998; Simonton 2004), but rarely as a source of well-being for researchers themselves. This oversight contrasts with growing concerns about burnout, stress, and identity fragmentation in academia (Pyhältö et al., 2012; Woolston 2018). Studies of doctoral students and early-career researchers consistently show that well-being is strongly influenced by workload pressures, precarious contracts, and competitive evaluation systems, while positive coping mechanisms receive much less attention. By overlooking artistic engagement, the literature on researcher well-being has tended to focus

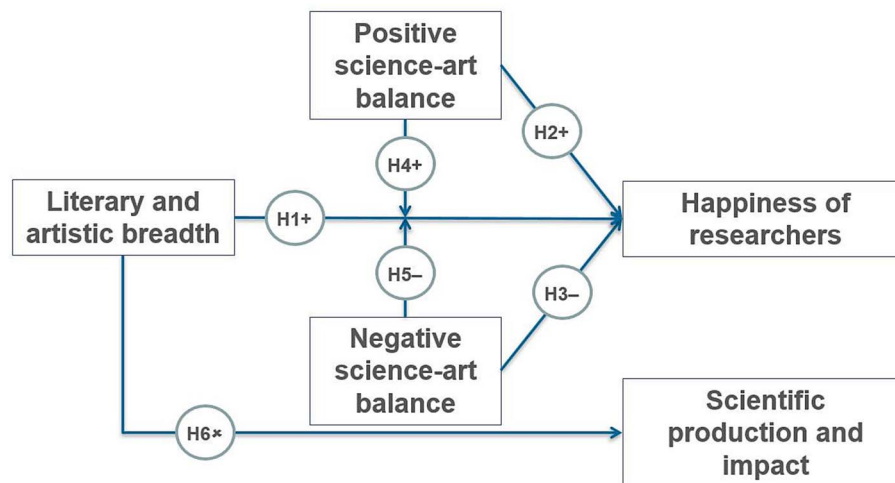


Figure 1 Conceptual model showing the hypothesised relationships between literary and artistic breadth, science–art balance, researcher happiness, and scientific performance. Literary and artistic breadth is hypothesised to be positively associated with researcher happiness (H1) and not negatively associated with scientific production and impact (H6). Positive science–art balance is hypothesised to be positively associated with happiness and to strengthen the relationship between artistic breadth and happiness (H2, H4), whereas negative science–art balance is hypothesised to be negatively associated with happiness and to weaken that relationship (H3, H5).

narrowly on institutional demands, rather than on personal strategies that might sustain happiness and resilience.

Drawing on Self-Determination Theory (Deci and Ryan 2000), engagement in artistic practices can be understood as fulfilling three basic psychological needs: autonomy, by enabling self-directed expression; competence, through the development of artistic skills; and relatedness, by connecting individuals to broader cultural communities. Arts engagement may also provide emotional balance, stress relief, and alternative sources of meaning that buffer against the strains of academic life (Bojner Horwitz et al., 2020). Such findings echo evidence that systemic stress in graduate and early-career research environments undermines well-being and innovation, underscoring the importance of personal strategies for resilience (Cho and Hayter 2020; Siler 2024). These mechanisms suggest that artistic practices may play a unique role in counteracting the pressures of academia by providing alternative routes to identity construction and fulfilment.

In this study, engagement in literary and artistic practices is operationalised as breadth across creative domains. From a theoretical perspective, breadth captures exposure to multiple expressive roles and identity resources, which is particularly relevant for understanding well-being in academic careers characterised by strong performance pressures. Research on multiple role engagement and identity integration suggests that access to diverse roles can provide psychological resources and buffers against strain, independently of the intensity or formal recognition of any single activity (Thoits, 2003; Sieber 1974). Focusing on breadth therefore allows us to capture a wide range of creative practices that are theoretically salient for researcher happiness.

Hypothesis 1. The extent of engagement in literary and artistic practices is positively associated with researcher happiness.

The following hypotheses (H2 to H5) apply only to researchers who report some engagement in literary or artistic practices. Hypothesis 6, which examines whether the extent of engagement is associated with scientific output, is tested in the full sample.

2.2 Science-art balance and researcher happiness

Despite evidence that creative pursuits support well-being, not all researchers benefit equally. The professional context in which engagement occurs matters. We introduce the concept of *science-art balance* to capture the perceived compatibility between creative and scientific pursuits. The notion has been previously introduced and operationalised in related research examining science communication through art, where it was used to characterise how researchers experience synergies and tensions between artistic engagement and scientific careers (Azagra-Caro and Pavone 2024). In the present study, we extend the application of this construct to a different outcome—researcher happiness—and examine its direct and moderating roles in relation to well-being.

The construct draws inspiration from psychological research on affect, which distinguishes between positive and negative dimensions of experience (Watson et al., 1988). Positive and negative science-art balance are not conceptualised as opposite ends of a single continuum, but as distinct dimensions that may coexist, reflecting simultaneous experiences of synergy and tension between creative and scientific roles. Researchers may experience artistic engagement as reinforcing their academic identity (positive balance) or as undermining it (negative balance).

Positive science–art balance may generate a sense of coherence and meaning across roles, enhancing the well-being benefits of artistic engagement. Identity theories suggest that when multiple roles are perceived as compatible, individuals experience less strain and more psychological resources (Rothbard and Ramarajan 2009; Azagra-Caro and Tur 2018; Hirschi et al., 2018). In academia, this alignment can strengthen researchers' sense of coherence between personal and professional spheres, reinforcing psychological needs for autonomy, competence, and relatedness (Deci and Ryan 2000). When researchers perceive their creative pursuits as professionally valuable—for example, by signalling competences, expanding networks, or enhancing public

engagement—the resulting synergies may increase both job satisfaction and happiness (Lam 2020; Leavy 2020).

Conversely, negative science–art balance arises when creative practices are seen as illegitimate or professionally risky. Academic environments often privilege narrowly defined measures of performance, potentially marginalising or devaluing creative practices (Bazeley 2010; Müller 2014). Research on role conflict shows that incompatible identities reduce satisfaction and increase stress (Greenhaus and Beutell 1985; Becher and Trowler 2001). Recent evidence reinforces these concerns: studies in academia confirm that inter-role conflict undermines well-being (Yaban et al., 2025), while organisational research shows that role ambiguity suppresses both creativity and satisfaction (Ahmad 2023). Comparable dynamics are visible in policy contexts, where work–life measures often prove double-edged: enabling in principle but stigmatised in practice, shaping whether academics experience them as supportive or detrimental to career sustainability (Feeney et al., 2014). In this sense, science–art balance reflects how evaluation criteria, recognition frameworks, and career incentives translate research governance arrangements into researchers' lived experiences of compatibility or conflict. Together, these findings suggest that the perceived compatibility of artistic and scientific roles is central to understanding whether engagement is associated with higher or lower researcher happiness.

Hypothesis 2. Higher positive science–art balance is associated with greater researcher happiness.

Hypothesis 3. Higher negative science–art balance is associated with lower researcher happiness.

2.3 The moderating role of science-art balance

The relationship between literary and artistic engagement and researcher happiness is unlikely to be uniform. It is expected to depend on how researchers interpret the compatibility of these practices with their professional roles. Research in psychology shows that the benefits of creativity for well-being are strongest when activities align with broader life goals and identities (Forgeard and Mecklenburg 2013). In academic contexts, where time and legitimacy are scarce resources, this alignment—or lack thereof—becomes especially salient.

When science–art balance is perceived as positive, researchers may experience artistic and scientific activities as mutually reinforcing, increasing the benefits for well-being and identity coherence (Deci and Ryan 2000; Hirschi et al., 2018). Perceiving engagement as complementary can amplify happiness gains by affirming competence, autonomy, and professional purpose. This dynamic reflects broader evidence that researchers' choices are often guided by intrinsic interests and perceived meaning rather than formal incentives, highlighting the centrality of personal motivation in sustaining engagement (Nelson 2024). Conversely, if creative pursuits are seen as conflicting with scientific obligations, psychological tensions may arise. Institutional settings that emphasise short-term outputs and narrow evaluation metrics leave little room for activities not directly recognised in performance assessments, intensifying perceptions that artistic practices compete with scientific responsibilities. Negative science–art balance in this sense does not reflect embarrassment or shame about creativity *per se*, but rather experienced role conflict and

perceived professional risk associated with engaging in activities viewed as illegitimate or career-threatening. When researchers face scepticism or professional penalties related to their creative work, the positive relationship between engagement and happiness may be attenuated. Prior studies have shown that role conflict undermines the psychological benefits of creative engagement (Dietz and Bozeman 2005; Van Arensbergen et al., 2014). The moderating role of science–art balance is also likely to be asymmetric. Positive balance can generate cumulative gains, reinforcing autonomy, competence, and relatedness, whereas negative balance may erode these same needs more strongly than positive balance enhances them. This asymmetry mirrors evidence from role conflict research, where negative spillovers across domains often exert stronger effects on well-being than positive spillovers (Ahmad 2023; Yaban et al., 2025). Accordingly, science–art balance not only conditions whether engagement benefits happiness but may also determine the strength and direction of this relationship.

Hypothesis 4. Positive science–art balance is associated with a stronger positive relationship between engagement in literary and artistic practices and researcher happiness.

Hypothesis 5. Negative science–art balance is associated with a weaker positive relationship between engagement in literary and artistic practices and researcher happiness.

2.4 Literary and artistic breadth and research performance

A potential concern is that engagement in literary and artistic practices may come at the expense of research performance, either by reallocating time and cognitive resources or by diluting professional focus (Fox and Mohapatra 2007). This scepticism reflects a long-standing zero-sum assumption that personal creativity and academic work are in tension. Such concerns are reinforced by institutional cultures that reward narrowly defined outputs, raising doubts about whether time spent on artistic pursuits detracts from professional success.

However, research on dual-domain engagement suggests the opposite: creative activity outside science may foster, rather than detract from, cognitive flexibility, divergent thinking, and problem-solving capacities relevant to research (Simonton 2004; Root-Bernstein et al., 2008). Engagement in multiple creative domains may also serve distinct psychological functions without directly interfering with academic work (Anderson et al., 2014). Historical evidence shows that many eminent scientists actively pursued artistic practices, which often stimulated their scientific insights (Feist 1998; Root-Bernstein and Root-Bernstein 2013).

Studies of professionals in other sectors similarly indicate that creative hobbies reduce burnout and enhance innovation (Baird et al., 2012). Within academia, engagement in both science and the arts has been associated with higher levels of scientific innovation and originality (Escribano Belmar et al., 2023). Research on creative engagement in educational and professional contexts further suggests that such practices enrich, rather than displace, core responsibilities, providing additional grounds to expect that artistic practices need not undermine either scientific production or scientific impact (Henriksen and Sawyer 2025). Taken together, these findings support the view that artistic engagement can be a

complementary resource for research performance rather than a competing demand.

Hypothesis 6. Engagement in literary and artistic practices is not associated with lower scientific production or scientific impact.

The hypothesised relationships across the variables introduced in this section are summarised in Fig. 1.

3. Sample and methods

3.1 Context of the research

This study was conducted in Spain, a country whose academic system provides a relevant setting to examine the interplay between scientific careers, creative engagement, and researcher happiness. Like many other European systems, Spanish research careers are shaped by strong pressures to publish in international journals, secure external funding, and meet formal evaluation metrics focused on scientific output (Jiménez-Contreras et al., 2003; Costas and Bordons 2011). At the same time, institutional recognition of alternative forms of academic creativity, such as literary and artistic engagement, remains limited and often informal. Although public policies increasingly promote knowledge transfer and societal engagement, artistic and cultural activities are rarely integrated into formal career evaluation criteria.

The Spanish context is also characterised by considerable employment uncertainty for many researchers, particularly early-career academics, which may intensify work-life tensions and make alternative forms of creative engagement both psychologically rewarding and professionally sensitive. These institutional and cultural conditions make Spain a valuable empirical context for exploring how literary and artistic engagement intersects with researcher happiness, science-art balance, and scientific performance.

3.2 Sample and survey design

The study population comprises Spanish researchers identified as corresponding authors in Web of Science publications from 2013 to 2016. Corresponding authors, often lead contributors, are recognised as reliable informants (Bhandari et al., 2014; Mattsson et al., 2011) and commonly serve as peer reviewers (Weiss, 2012; Wren et al., 2006).

Our sample includes both academic researchers—those in universities, research organisations, or healthcare establishments (88%)—and researchers from private companies, NGOs, and public administration. We collected approximately 65,000 valid email addresses and received ethical approval from CSIC and the Polytechnic University of Valencia. A two-wave survey design mitigated common method bias and potential endogeneity: independent and moderating variables were collected in 2018, and the dependent variable (happiness) in 2022. Temporal separation reduced response biases. Nevertheless, the study remains observational and cannot fully rule out reverse causality or omitted variables; the two-wave design therefore strengthens temporal ordering but does not warrant strong causal claims.

Following pilot studies in July 2017 and April 2018, the first wave was administered from July to November 2018, obtaining over 7,300 responses (11% response rate), ensuring a 95% confidence level with a 1% margin of error. Non-response bias was assessed

by comparing Field Normalised Citation Scores (FNCS) between respondents and non-respondents.¹ A slight difference was found (1.30 versus 1.35), but the overlap supports representativeness.

The second wave included pilots in January and March 2022, with final data collected between May and July 2022, yielding over 2,500 responses (34% response rate).

The survey instrument and de-identified dataset are available in an open-access repository (Azagra-Caro, 2025).

3.3 Variables

Happiness, our dependent variable, was measured in 2022 using the validated Spanish version of the four-item Subjective Happiness Scale (Lyubomirsky and Lepper 1999; Extremera and Fernández-Berrocal 2014; see Appendix, Table A1). The scale captures general self-perceived happiness through global self-assessment and social comparison items. Responses were collected on a 1–7 Likert scale, with higher values indicating greater happiness. Internal consistency was high (Cronbach's $\alpha = 0.85$).

The study also examines two bibliometric outcomes as dependent variables: subsequent scientific production and subsequent scientific impact. Subsequent scientific production is measured as the total number of publications indexed in the Web of Science in 2020, two years after the first survey wave, to mitigate concerns about simultaneity and reverse causality. Subsequent scientific impact is measured as the Field Normalised Citation Score, calculated as the average number of citations received by all of a researcher's publications, adjusted for field of science, within a two-year citation window (2020–2022), following the same approach described in Footnote 1. To account for baseline differences in research performance, we additionally include past scientific production and past scientific impact as controls, defined respectively as the total number of publications during 2013–2018 and the mean Field Normalised Citation Score for those publications, again using a two-year citation window. All bibliometric indicators are derived from Web of Science data.

The first independent variable, literary and artistic breadth, captures the extent and commercialisation of researchers' engagement in literary and artistic practices. Drawing on an expanded version of the Short Creativity Achievement Questionnaire (SCAQ; Carson et al., 2005), respondents were asked whether they had created original work in eleven domains, covering visual, literary, performative, architectural, and digital fields: plastic arts (e.g. drawing, painting, sculpture), photography, new media arts, music, performing arts, architecture, fiction writing (e.g. poetry, novel, story, playwriting, scriptwriting), non-fiction writing (e.g. essay, journalism, biography), theatre direction, film direction, and other artistic areas (Appendix, Table A2). For each domain, respondents indicated whether they had produced no work (coded 0), unpaid/non-commercialised work (coded 1), or paid/commercialised work (coded 2). The final variable sums these values across domains, producing a weighted measure that reflects both the breadth and professionalisation of literary and artistic engagement. For example, a researcher who produces short films on an unpaid basis (coded 1) and

¹ FNCS was calculated by dividing a paper's two-year citation count by the average for Spanish papers in the same field and year. For example, a 2016 paper cited once in 2016–2018, in 'Mathematics, Applied' and 'Mathematics', yields $FNCS = ((1/1.25) + (1/0.97))/2 \approx 0.91$.

writes novels that are published and commercially exploited (coded 2) would have a literary and artistic breadth score of 3. This inclusive operationalisation acknowledges diverse forms of creative activity beyond scientific publishing, regardless of formal training, and aligns with arts-based research and knowledge mobilisation frameworks that view literary and artistic practices as meaningful avenues of academic and public engagement (Lam 2020; Leavy 2020). While some domains may be considered peripheral to conventional definitions of academic creativity, we treat this breadth as a strength, capturing the full spectrum of often marginalised or invisible creative practices within academic careers.

The other independent variables are positive science-art balance and negative science-art balance, both measured on 1–7 Likert scales. The survey included an eight-item Science-Art Balance Questionnaire (SABQ) assessing how respondents perceived the integration of their literary and artistic practices within their scientific profession (Appendix, Table A3). The items were developed from nominative statements emerging from prior qualitative research (Azagra-Caro et al., 2020), such as ‘I try to make colleagues aware of my artistic facet’. An exploratory factor analysis yielded a two-factor structure: the first factor (positive science-art balance) captures perceived synergies and professional benefits (e.g. competence signalling, career opportunities, CV merit); the second factor (negative science-art balance) reflects tensions and drawbacks (e.g. personal strain, insufficient links, preference for artistic careers, disadvantage from colleagues’ reactions). Reliability was high for the positive dimension (Cronbach’s $\alpha = 0.86$) and acceptable for the negative dimension (Cronbach’s $\alpha = 0.66$). Each variable was computed as the mean of its corresponding four items. As shown in Table 1, the mean values indicate that, on average, researchers reported relatively low levels of science-art integration compared to the theoretical midpoint.

Control variables included institutional, sociodemographic, professional and psychological factors. To address social desirability bias, we incorporated self-deceptive enhancement and impression management ($\alpha = 0.68$ and 0.73 , respectively) from the Balanced Inventory of Desirable Responding Short Form (Mikulic et al., 2017; Hart et al., 2015; de la Rubia et al., 2012).

3.4 Analytical strategy

To test H1, the final analytical sample comprised 2,521 active researchers. Descriptive statistics are presented in Table 1, with correlations detailed in Appendix Tables A4 and A5.

To test H2 to H5, researchers with positive literary and artistic breadth were invited to voluntarily complete the Science-Art Balance Questionnaire (SABQ). A total of 938 respondents provided valid responses (65% of all literary and artistic researchers), constituting the analytical sample for these hypotheses. Table 1 also reports descriptive statistics for this subsample.

To test H6, we use the same population of 2,521 active researchers employed to test H1, but restrict the analysis to those for whom complete bibliometric information on past and subsequent scientific production and impact could be retrieved from Web of Science. This results in an analytical sample of 2,048 researchers. Descriptive statistics for the bibliometric variables and this reduced sample are reported in Appendix Table A6. Because bibliometric indicators are available only for this subsample and are conceptually distinct from the survey-based

constructs used in the happiness models, they are not included in the main correlation table.

To model the relationships between literary and artistic breadth, science-art balance, and happiness, we employed both full and stepwise regression using the backward selection method. Starting from a saturated model, variables were iteratively removed based on a 10% significance threshold, retaining only predictors whose exclusion would significantly deteriorate model fit. This procedure reduces redundancy and potential multicollinearity, ensuring that the final model retains the most influential predictors.

4. Results

4.1 Descriptive patterns of engagement, science-art balance, and happiness

Before presenting the regression analyses, we examine descriptive patterns in the data to illustrate the relationships between artistic engagement, perceived science-art balance, and researcher happiness.

Figure 2 shows that researchers with higher levels of engagement in literary and artistic practices report higher average happiness than those with lower levels of engagement. This association is evident both in the full sample of researchers ($n = 2,251$) and within the subsample of those who report any creative activity ($n = 938$). The difference is larger among engaged researchers, supporting the idea that more diverse or intense artistic involvement may be particularly beneficial for psychological well-being. These findings are consistent with Hypothesis 1. T-tests show that the differences in happiness between high and low engagement groups are statistically significant in both subsamples. From a science policy perspective, these descriptive patterns already suggest that discouraging creative engagement through narrow evaluation criteria may entail well-being costs, even before accounting for formal performance indicators.

Figure 3 examines the association between happiness and science-art balance among engaged researchers. Those with higher positive science-art balance report higher levels of happiness (5.29 versus 5.16), consistent with Hypothesis 2. For negative science-art balance, the difference is smaller but still in the expected direction: researchers with high negative balance report lower happiness than those with low negative balance (5.21 versus 5.24), consistent with Hypothesis 3. T-tests indicate that the difference is statistically significant for positive but not for negative balance.

To explore the potential moderating role of science-art balance, Fig. 4 focuses on researchers with high (over-average) engagement ($n = 583$). Among these highly engaged individuals, higher positive balance is associated with slightly greater happiness (5.34 versus 5.28), while higher negative balance is associated with substantially lower happiness (5.26 versus 5.38). These findings are consistent with Hypotheses 4 and 5. T-tests show that the difference is statistically significant for negative balance, but not for positive balance. While these descriptive comparisons do not constitute formal moderation tests, they offer preliminary visual support for the theorised interaction relationships. The stronger role of negative balance at higher levels of engagement highlights how evaluation and recognition environments that signal risk or

Table 1 Spanish researchers: Descriptive statistics of variables.

Role	Level	Variable name	Description/Explanation	All researchers (n = 2,521)				Artistic researchers (n = 938)			
				Mean	Sth. Dev.	Min.	Max.	Mean	Sth. Dev.	Min.	Max.
Dependent variable	Psychological	Happiness	Mean score (1–7 Likert scale) based on the Subjective Happiness Scale, capturing general self-perceived happiness through four items.	5.21	1.03	1.00	7.00	5.22	1.09	1.00	7.00
		Literary and artistic breadth (H1)	Number of literary and artistic domains in which the researcher has created original work, weighted by commercialisation (0 = no creation, 1 = unpaid/non-commercialised, 2 = paid/commercialised); sum across 11 domains.	1.57	1.88	0.00	11.00	2.98	1.77	1.00	11.00
Independent variables	Psychological	Positive science-art balance (H2)	Mean score (1–7 Likert scale) of four items capturing perceived synergies between research and literary/artistic work					2.74	1.43	1.00	7.00
		Negative science-art balance (H3)	Mean score (1–7 Likert scale) of four items capturing perceived tensions or disadvantages from combining research and literary/artistic work					2.59	1.06	1.00	6.50
Control variables	Institutional	Science field	Medicine	0.24	0.40	0.00	1.00	0.24	0.39	0.00	1.00
			Life Sciences	0.17	0.33	0.00	1.00	0.18	0.34	0.00	1.00
			Other Natural Sciences	0.25	0.38	0.00	1.00	0.22	0.38	0.00	1.00
			Engineering	0.14	0.31	0.00	1.00	0.11	0.28	0.00	1.00
			Social Sciences and Humanities	0.21	0.39	0.00	1.00	0.25	0.41	0.00	1.00
			Number of science fields	0.36	0.48	0.00	1.00	0.37	0.48	0.00	1.00
		Multidisciplinarity	Madrid	0.24	0.43	0.00	1.00	0.25	0.43	0.00	1.00
		Region of residence	Barcelona	0.09	0.29	0.00	1.00	0.10	0.30	0.00	1.00
			Valencia (other Spanish regions' is the initial benchmark)	0.10	0.30	0.00	1.00	0.10	0.29	0.00	1.00
		Foreign residence	Non-Spanish residence	0.04	0.21	0.00	1.00	0.06	0.23	0.00	1.00
	Sociodemo-graphic	Woman	Gender: 1 if woman, 0 if man	0.43	0.50	0.00	1.00	0.43	0.50	0.00	1.00
		Age	Number of years	48.21	9.55	18.00	79.00	47.72	9.74	18.00	78.00
		Foreign nationality	'Spanish only' is the benchmark	0.06	0.24	0.00	1.00	0.08	0.28	0.00	1.00
		Non-Spanish 1st language	'Spanish only' is the benchmark	0.21	0.41	0.00	1.00	0.24	0.43	0.00	1.00
		PhD	PhD title	0.91	0.28	0.00	1.00	0.90	0.29	0.00	1.00
		Married or registered partnership	Relationship status: 1 if in an institutionally recognised relationship (married or registered domestic partnership), 0 otherwise (unregistered partnership or no partner)	0.68	0.47	0.00	1.00	0.65	0.48	0.00	1.00
		Number of underage children	Number of children under 18 for whom the respondent is responsible	0.80	0.99	0.00	5.00	0.76	0.97	0.00	5.00
	Professional	Employed	Indicates whether the respondent was employed at the time of the 2022 survey (1 = employed, 0 = not employed or retired).	0.97	0.16	0.00	1.00	0.97	0.18	0.00	1.00
		Working in an organisation	Coded 1 if the respondent reported being affiliated with an organisation (e.g. university, research centre, hospital); 0 if independent, freelance, or otherwise unaffiliated.	0.96	0.21	0.00	1.00	0.94	0.23	0.00	1.00
		University	Coded 1 if the respondent's primary organisational affiliation is a university or higher education institution; 0 otherwise.	0.50	0.47	0.00	1.00	0.46	0.47	0.00	1.00
		Research organisation	Coded 1 if the respondent works at a public or private research institute that is not a university (e.g. CSIC, independent research centres); 0 otherwise.	0.20	0.38	0.00	1.00	0.19	0.38	0.00	1.00
		Health establishment	Coded 1 if the respondent works in a healthcare institution such as a hospital or health centre; 0 otherwise.	0.15	0.33	0.00	1.00	0.16	0.34	0.00	1.00
	Psychological	Self-deceptive enhancement	Degree to which researchers believe something to be true when it is not, even if they are not aware of portraying themselves positively nor consciously trying to	4.12	0.47	2.00	6.13	4.10	0.49	2.50	6.13
		Impression management	Degree to which researchers are intentionally seeking to keep up with social or group norms to avoid negative evaluation or judgement	3.92	0.57	1.00	5.88	3.94	0.57	1.00	5.88

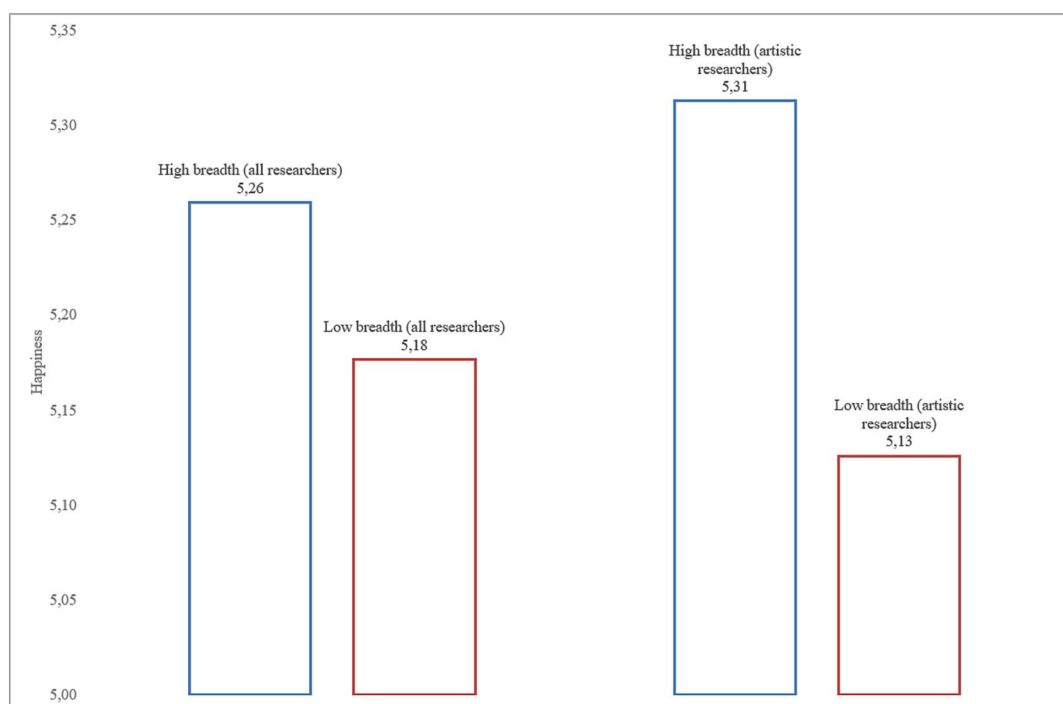


Figure 2 Researcher happiness by level of artistic engagement (high versus low breadth). Respondents are grouped into over-average (high) and under-average (low) literary and artistic breadth, first for the full sample of researchers ($n = 2,521$), and then for the subsample who report any engagement in artistic activities ($n = 938$). In both groups, higher engagement is associated with greater happiness, with a larger difference observed among artistic researchers. T-tests indicate that these differences are statistically significant. These results are consistent with hypothesis 1, which proposes a positive association between engagement and researcher happiness.

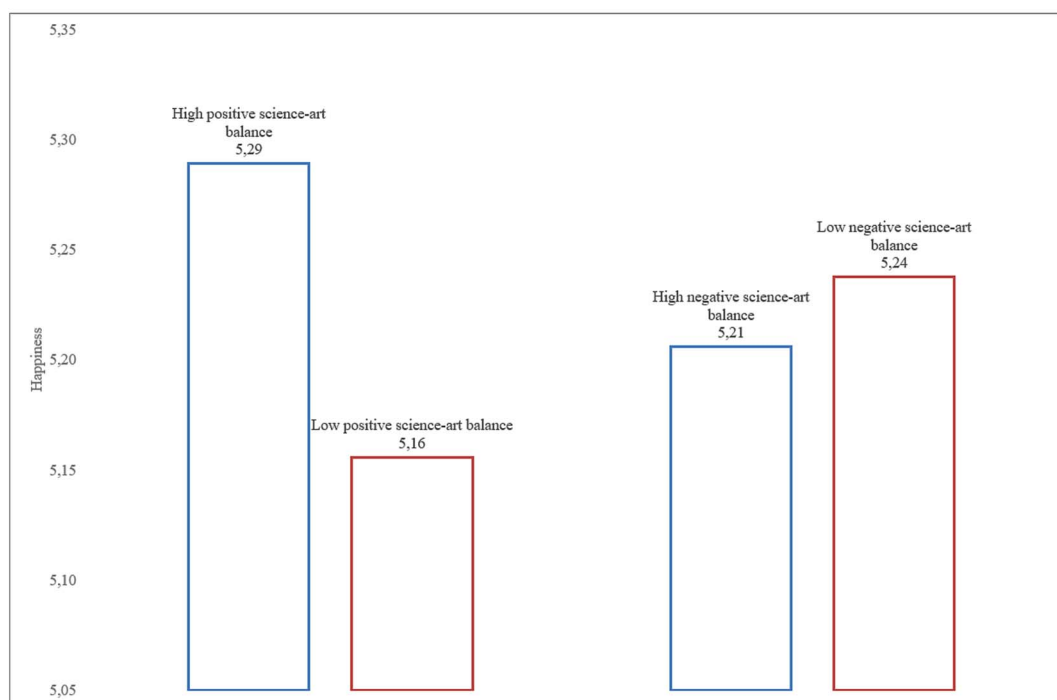


Figure 3 Researcher happiness by levels of positive and negative science-art balance. The figure compares average happiness for researchers with high and low levels of positive and negative science-art balance, respectively. Those with higher positive balance report greater happiness (consistent with hypothesis 2), while those with higher negative balance report slightly lower happiness (consistent with hypothesis 3). T-tests indicate that the difference is statistically significant for positive balance, but not for negative balance. These descriptive results are based on the subsample of artistic researchers ($n = 938$).

Table 2 Regression of researcher happiness.

	1 Full model	2 Backward selection	3 Full model	4 Backward selection	5 Full model	6 Backward selection	7 Full model	8 Backward selection
Medicine	0.17** (0.08)	0.14*** (0.05)	0.32** (0.15)	0.23*** (0.08)	0.33** (0.15)	0.25*** (0.08)	0.14 (0.12)	0.24*** (0.08)
Life Sciences	0.07 (0.08)		0.19 (0.15)		0.17 (0.15)		−0.01 (0.13)	
Other Natural Sciences	−0.01 (0.08)		0.05 (0.15)		0.05 (0.15)		−0.14 (0.12)	
Engineering	0.00 (.)		0.00 (.)		0.00 (.)		−0.18 (0.14)	
Social Sciences and Humanities	0.14* (0.08)	0.13** (0.06)	0.19 (0.14)		0.18 (0.14)		0.00 (.)	
Multidisciplinarity	0.09** (0.04)	0.09** (0.04)	0.16** (0.08)	0.17** (0.07)	0.14* (0.08)	0.15** (0.07)	0.14* (0.08)	0.15** (0.07)
Madrid	−0.02 (0.05)		−0.18** (0.08)	−0.16** (0.08)	−0.18** (0.08)	−0.17** (0.08)	−0.18** (0.08)	−0.17** (0.08)
Barcelona	0.09 (0.07)		−0.04 (0.13)		−0.04 (0.13)		−0.05 (0.13)	
Valencia	0.03 (0.07)		−0.05 (0.12)		−0.05 (0.12)		−0.05 (0.12)	
Non-Spanish residence	−0.05 (0.12)		0.07 (0.18)		0.07 (0.18)		0.09 (0.18)	
Woman	0.07* (0.04)	0.08* (0.04)	0.09 (0.07)		0.09 (0.07)		0.09 (0.07)	
Age	0.01** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Foreign nationality	0.11 (0.09)		0.17 (0.13)		0.15 (0.13)		0.14 (0.13)	
Non-Spanish 1st language	−0.02 (0.06)		−0.03 (0.09)		−0.03 (0.09)		−0.03 (0.09)	
PhD	0.03 (0.08)		0.21 (0.13)		0.21* (0.13)		0.23* (0.13)	
Married or registered partnership	0.19*** (0.05)	0.19*** (0.05)	0.16* (0.09)	0.16* (0.08)	0.16* (0.08)	0.16* (0.08)	0.16* (0.08)	0.16* (0.08)
Number of underage children	0.07*** (0.02)	0.07*** (0.02)	0.10*** (0.04)	0.09** (0.04)	0.10*** (0.04)	0.09** (0.04)	0.10*** (0.04)	0.10*** (0.04)
Employed	0.32* (0.18)		0.40 (0.28)		0.37 (0.28)		0.39 (0.28)	
Working in an organisation	−0.14 (0.14)		−0.19 (0.18)		−0.17 (0.19)		−0.20 (0.19)	
University	0.01 (0.07)		−0.13 (0.12)		−0.12 (0.12)		−0.12 (0.12)	
Research organisation	−0.09 (0.08)	−0.09* (0.06)	−0.08 (0.14)		−0.07 (0.14)		−0.07 (0.14)	
Health establishment	−0.00 (0.09)		−0.03 (0.14)		−0.02 (0.14)		−0.01 (0.14)	
Self-deceptive enhancement	−0.21*** (0.05)	−0.23*** (0.05)	−0.24*** (0.08)	−0.25*** (0.07)	−0.24*** (0.08)	−0.25*** (0.07)	−0.24*** (0.08)	−0.26*** (0.07)
Impression management	−0.06 (0.04)		0.01 (0.07)		0.00 (0.07)		0.00 (0.07)	
Literary and artistic breadth (H1)	0.03** (0.01)	0.03** (0.01)			0.05** (0.02)	0.05*** (0.02)	0.06*** (0.02)	0.06*** (0.02)
Positive science-art balance (H2)			0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.10** (0.04)	0.08*** (0.03)

(continued)

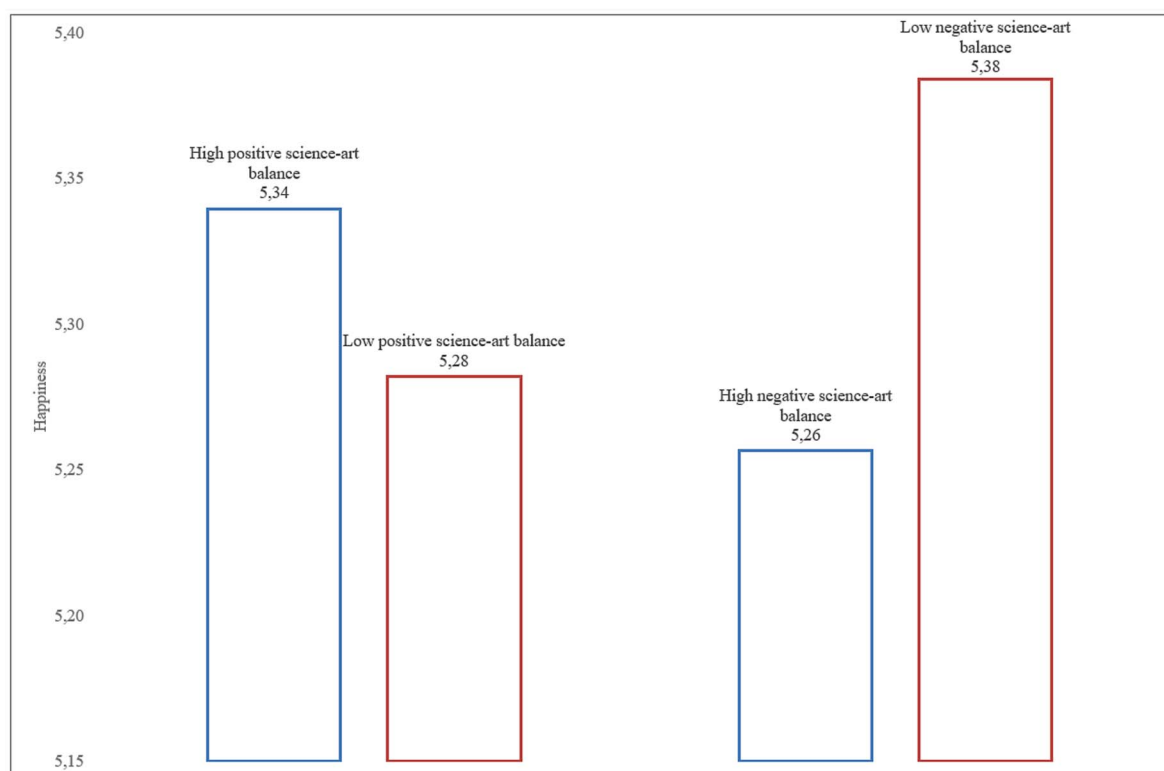


Figure 4 Researcher happiness by science-art balance among researchers with high artistic engagement. This figure shows average happiness among researchers with above-average engagement in literary and artistic practices ($n = 583$), grouped by high and low levels of positive and negative science-art balance. Higher positive balance is associated with slightly greater happiness (consistent with hypothesis 4), while higher negative balance is associated with substantially lower happiness (consistent with hypothesis 5). T-tests indicate that the difference is statistically significant for negative balance, but not for positive balance. These descriptive results offer a visual approximation of the moderating role of science-art balance when engagement is high.

recognising or supporting creative engagement necessarily entails trade-offs in scientific output or impact.

Past scientific production and impact significantly predict subsequent scientific production and impact, respectively, as expected. Across models, other control variables show some associations: older researchers, or researchers in the social sciences and humanities report lower production or citation impact, while those with a PhD, affiliated to a university or a research organisation stand out in both.

Taken together, these findings indicate that although literary and artistic engagement is positively associated with researcher happiness, it is not associated with diminished research output or citation performance.

5. Discussion, conclusions and limitations

This study contributes to understanding how engagement in literature and the arts relates to researcher happiness and research performance. Consistent with Self-Determination Theory and creativity research, we find that engagement in literary and artistic practices is positively associated with researcher happiness, consistent with the idea that creative activities enrich researchers' emotional lives by fulfilling core psychological needs for autonomy, competence, and relatedness. Measured in this

study as breadth across multiple domains, engagement may provide diverse sources of self-expression and meaning, which are linked to higher happiness. These findings extend the broader literature on researcher well-being by showing that personal creative practices, often overlooked in discussions dominated by institutional stressors, may play a constructive role in sustaining academic careers.

Our results also highlight the theoretical importance of science-art balance in shaping these relationships. We show that perceptions of compatibility between scientific and artistic roles can be understood in terms of positive and negative dimensions, analogous to the distinction between positive and negative affect. A positive science-art balance—where researchers perceive their creative activities as professionally valuable—is associated with greater happiness. Conversely, a negative balance—where creative pursuits generate professional tension—is linked to lower happiness and weaker benefits of engagement. Taken together, these findings indicate that the relationship between artistic engagement and happiness depends not only on individual preferences, but also on how professional environments signal legitimacy, value, or risk. By introducing the concept of science-art balance, we help bridge two literatures—researcher well-being and artistic engagement—through a novel psychological mechanism that connects individual experience with institutional and evaluative contexts.

Table 3 Regression of scientific production and scientific impact.

	1 Subsequent scientific production full model	2 Subsequent scientific production backward selection	3 Subsequent scientific impact full model	4 Subsequent scientific impact backward selection
Past scientific production	0.14*** (0.02)	0.14*** (0.02)		
Past scientific impact			0.05*** (0.02)	0.05*** (0.01)
Medicine	0.09 (0.25)		0.03 (0.06)	
Life Sciences	0.00 (.)		0.00 (.)	
Other Natural Sciences	−0.41** (0.21)	−0.39** (0.16)	0.06 (0.08)	
Engineering	−0.40* (0.23)	−0.31* (0.19)	0.07 (0.11)	
Social Sciences and Humanities	−0.65*** (0.20)	−0.64*** (0.15)	−0.24*** (0.06)	−0.28*** (0.05)
Multidisciplinarity	0.06 (0.11)		0.01 (0.04)	
Madrid	0.23 (0.14)		−0.03 (0.05)	
Barcelona	0.26 (0.22)		−0.03 (0.07)	
Valencia	0.30 (0.20)		0.00 (0.09)	
Non-Spanish residence	−0.53* (0.30)	−0.59** (0.29)	−0.28*** (0.08)	−0.26*** (0.07)
Woman	−0.15 (0.12)		−0.01 (0.04)	
Age	−0.01** (0.01)		−0.00** (0.00)	−0.00** (0.00)
Foreign nationality	−0.21 (0.22)		0.06 (0.08)	
Non-Spanish 1st language	−0.14 (0.15)		−0.01 (0.06)	
PhD	0.36 (0.23)	0.43** (0.21)	0.19*** (0.06)	0.19*** (0.06)
Married or registered partnership	0.09 (0.12)		−0.04 (0.05)	
Number of underage children	−0.01 (0.06)		−0.01 (0.02)	
Employed	−1.04** (0.45)	−1.07** (0.45)	0.02 (0.12)	
Working in an organisation	0.60*** (0.23)	1.06*** (0.17)	0.12 (0.11)	
University	0.51*** (0.19)		0.17** (0.08)	0.26*** (0.05)
Research organisation	0.43** (0.21)		0.15* (0.08)	0.22*** (0.05)
Health establishment	0.26 (0.26)		−0.08 (0.08)	
Self-deceptive enhancement	−0.12 (0.11)		−0.04 (0.08)	
Impression management	−0.00 (0.10)		−0.04 (0.05)	
Literary and artistic breadth (H6)	−0.04 (0.03)		−0.02 (0.01)	
Constant	2.64*** (0.96)	1.38*** (0.50)	0.75** (0.33)	0.46*** (0.13)
N	2048	2048	2048	2048
F	8	21	7	16
p	0.00	0.00	0.00	0.00

* $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$. Robust standard errors in parenthesis. No multicollinearity according to VIF. Happiness measured in 2022. Other psychological and control variables measured in 2018. Scientific production.

The results also reveal a clear asymmetry in how science–art balance operates. While positive science–art balance shows a direct association with happiness, negative science–art balance primarily conditions the relationship between artistic engagement and well-being. In other words, positive perceptions of compatibility are linked to higher happiness levels, whereas negative perceptions play a key role in how the relationship between engagement and well-being is experienced. This distinction suggests that professional contexts that generate tension or signal risk may be associated with weaker well-being gains linked to artistic engagement, highlighting the importance of reducing such sources of conflict alongside any efforts to promote integration.

At the same time, we find no evidence that engagement in literary and artistic practices is associated with lower research performance. Engagement shows no significant association with either scientific production or scientific impact. This challenges the traditional dichotomy between academic performance and creative practices and supports a more holistic understanding of research careers in which artistic and scientific work can coexist without trade-offs. This absence of a detectable association is consistent with our theoretical framing of literary and artistic engagement as a complementary activity that fulfils distinct psychological and expressive functions without substituting for scientific work. In this perspective, creative practices draw on different cognitive, temporal, and motivational resources, supporting well-being without being associated with lower publication output or citation impact. Our results are therefore consistent with dual-domain engagement theories, which argue that combining activities across domains may generate complementary resources, fostering cognitive flexibility, resilience, and innovation rather than creating zero-sum trade-offs.

From a science policy perspective, these findings have direct implications for the governance and evaluation of research systems. Ministries responsible for science and higher education, research funding agencies, evaluation bodies, and universities all shape the incentive structures that influence how researchers allocate time and interpret professional risk. If researcher well-being is recognised as a condition for sustainable and innovative research systems, then creative practices outside formal science should not be implicitly discouraged through narrow evaluation criteria. Our results suggest that recognising or accommodating such practices does not entail a performance penalty, calling into question evaluation regimes that treat them as distractions or liabilities.

Policy levers to address this do not require radical reform. Modest but visible measures—such as the option to use narrative CV formats in recruitment and promotion procedures, explicit guidance to evaluation panels on how creative-cultural activities should be interpreted, or the creation of small-scale institutional support schemes (e.g. seed funding, short residencies, shared spaces)—may reduce perceptions of professional risk and stigma. Such measures can be implemented at multiple levels, including universities, research organisations, and funding agencies, without altering core performance metrics. By influencing how creative engagement is recognised rather than mandating participation, research policy can mitigate negative science–art balance and support conditions under which the well-being associations of artistic engagement may emerge without undermining scientific productivity. In this sense, the findings

speak directly to research system design choices concerning incentives, recognition, and career sustainability.

This study also opens several avenues for future research. Perceptions of science–art compatibility are likely to vary across disciplinary and institutional contexts. Fields with stronger traditions of public engagement or interpretive work—such as the social sciences, humanities, and some areas of medicine—may offer more legitimate spaces for integrating artistic practices than disciplines characterised by highly standardised evaluation criteria and narrow performance metrics. Similarly, institutional environments differ in how they signal the legitimacy of creative engagement, with universities, research organisations, and hospitals embedding distinct norms, expectations, and career incentives. While the present study does not aim to systematically compare these contexts, such variation may influence how researchers experience science–art balance and represents an important direction for future research.

Longitudinal designs could explore the long-term consequences of creative engagement on career trajectories, innovation capacities, and career sustainability. Qualitative studies may deepen understanding of how researchers experience identity integration and negotiate tensions between scientific and artistic roles. Comparative analyses across institutional and disciplinary contexts would also help clarify how cultures of evaluation, professional norms, and career stages shape the science–art balance and its relationship with happiness and performance.

As with any observational study, this research has limitations that should be considered when interpreting the results. The two-wave design helps mitigate common method bias and strengthens temporal ordering, but the study remains observational and causal claims should be interpreted with caution. While we controlled for social desirability, self-reported measures of happiness, engagement, and science–art balance may still reflect subjective biases. The study focuses on researchers in Spain; replication in other national and institutional contexts would strengthen generalisability, particularly given variation in academic evaluation systems and cultural attitudes toward artistic practices. Finally, while our measure captures engagement across multiple domains, future research could explore how specific forms of creative practice (e.g. visual arts, fiction writing, music) may differentially relate to happiness and research performance across career stages and disciplines.

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Supplementary material

Supplementary material is available at *Science and Public Policy Journal* online.

Conflict of interest

None declared.

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Data availability

The survey instrument and de-identified dataset are available in an open-access repository (Azagra-Caro, 2025).

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