

Interdisciplinary research: why do(‘nt) postdocs and professors conduct it?

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INTRODUCTION

Global warming and protecting our privacy online: these are just two examples of the complex problems facing our society today. To respond to these and other wicked problems, a multi-perspective approach is necessary. Interdisciplinary research is such an approach (Dotti & Mobjörk, 2022; Müller & Kaltenbrunner, 2019), and Flanders wants to encourage this. But what (de)motivates researchers in Flanders to engage in interdisciplinary research?

For **Flanders**, very little is known about researchers' motivations. Only the Royal Flemish Academy of Belgium for Sciences and Arts has already addressed why researchers (do not) conduct interdisciplinary research (Waelkens, 2019). According to them, researchers in Flanders would be more inclined to engage in interdisciplinary research if they see its intellectual added value.

Internationally, the question of what factors encourage and discourage interdisciplinary research has already been studied. These studies point to several *encouraging factors* for interdisciplinary research. For example, researchers indicate that they do interdisciplinary research because they enjoy it and it interests them, but also because they get satisfaction from it, find it an intellectual challenge, find it innovative research, can learn from it, and can have an impact on society (Groot & Klostermann, 2009-Netherlands; Nair et al., 2008-Canada; Milman et al., 2017-USA). In addition, the availability of (additional) funding, access to experts and skills, and career opportunities also motivate researchers to engage in interdisciplinary research (Harris et al., 2009-UK; Nair et al., 2008-Canada; Milman et al., 2017-USA; Senecal et al., 2021-Canada).

In contrast, what *discourages* researchers from conducting interdisciplinary research? First, there are factors inherent in interdisciplinary research that hold researchers back. Examples include its time-consuming nature and the differences between disciplines

(Milman et al., 2017-USA; Ursić et al., 2022-Europe). A second group of factors that create a barrier to interdisciplinary research are institutional factors such as other researchers' attitudes toward interdisciplinary research, the lack of institutional support to conduct interdisciplinary research, the lack of platforms to contact researchers from other disciplines, and structures geared towards monodisciplinary research (Milman et al., 2017-USA; Shrimpton & Astbury, 2011-Australia; Senecal et al., 2011-Canada; Technopolis & the Science Policy Research Unit, 2016-UK; Ursić et al., 2022-Europe). Finally, evaluation systems for funding, the lack of funding and promotion requirements also discourage researchers from conducting interdisciplinary research (Milman et al., 2017-USA; Senecal et al., 2011-Canada; Technopolis & the Science Policy Research Unit, 2016-UK; Ursić et al., 2022-Europe).

Because the Flemish context differs from the context in international studies (e.g., in terms of the university system, funding opportunities, and research policy), this brief addresses what (de)motivates researchers in Flanders to engage in interdisciplinary research. More specifically, the following questions are answered:

1. *What factors (de)motivate researchers in Flanders to conduct interdisciplinary research?*
2. *How do the (de)motivating factors for interdisciplinary research compare to those for monodisciplinary research?*
3. *Are there differences according to gender?*
4. *Are there differences according to science cluster?*
5. *Are there differences according to job position?*

DATA

To answer the questions, we combine a quantitative and qualitative data collection among postdoctoral researchers and professors at Flemish universities. The quantitative data collection was organized by ECOOM-Ghent University in collaboration with ECOOM-Hasselt University in spring 2023. During the same period, ECOOM-Ghent

University also organized semi-structured interviews to seek confirmation of the results from the survey on the one hand and to find out whether other factors than those in the survey play a role for Flemish researchers. A total of 111 postdocs and 204 professors completed the questionnaire (total sample=315). Table 1 shows that mainly male professors between 30 and 49 years participated and that every level of research experience is represented in the sample. In addition, we see both researchers from STEM and non-STEM and researchers combining STEM and non-STEM. Finally, the postdocs and professors mainly considered themselves to be interdisciplinary researchers.

Four postdocs and 11 professors participated in the interviews (total sample=15)¹. They represent both men and women, both STEM and non-STEM researchers and researchers who combine STEM and non-STEM, and both researchers who consider themselves interdisciplinary researchers and those who do not. Different levels in terms of age and research experience were also represented.

Table 1. Description of the participants of the survey about interdisciplinary research, Flanders, 2023

	Survey (N=315)	Population (N=774,8)
Gender		
Male	56.8%	63.5%
Female	41.6%	36.5%
Prefer not to say	1.6%	
Age		(no info)
20-29 years	4.1%	
30-39 years	31.1%	
40-49 years	30.5%	
50-59 years	25%	
60 years and older	8.9%	
Research experience		(no info)
< 6 years	5.4%	
6-10 years	18.7%	
11-15 years	15.2%	
16-20 years	15.2%	
21-25 years	20.6%	
26-30 years	9.2%	
30 years and more	15.2%	
Science cluster		(no info)
STEM	57.1%	
Non-STEM	32.7%	
Combination STEM/non-STEM	10.2%	
Function		
Postdoc	35.2%	54.4%
PROFESSORS	64.8%	45.6%

Note. STEM includes natural sciences; engineering and technology; medical and health sciences; agriculture, veterinary medicine, and food sciences. Non-STEM includes social sciences and humanities. The source of the population statistics is the Flemish indicators book from ECOOM (2023) and is based on full-time equivalents employed at Flemish universities in 2022.

In the survey, we asked postdoctoral researchers and professors the following question, "To what extent do the factors below encourage or discourage you from doing interdisciplinary research (IDR)?" The response options were "Totally discourages to do IDR," "Discourages to do IDR," "Neither discourages nor encourages to do IDR," "Encourages to do IDR," and "Totally encourages to do IDR." To compare the enabling and discouraging factors for interdisciplinary research with those for monodisciplinary research (MDR), postdocs and professors also answered this question for monodisciplinary research. The list of factors is based on previous research (see the introduction to this brief).

In the qualitative interviews, postdocs and professors were asked the questions "What encourages you to do interdisciplinary research?" and "What discourages you from doing interdisciplinary research?" Similarly, they were asked about what encourages and discourages them from doing monodisciplinary research.

To answer the research questions, for the survey data, we look at the proportion of researchers who perceived a factor as (very) encouraging (i.e., the response options "encourages to do IDR/MDR" and "totally encourages to do IDR/MDR"), neutral (i.e., the response option "neither discourages nor encourages to do IDR/MDR") and (very) discouraging (i.e., the response options "totally discourages to do IDR" and "discourages to do IDR"). For the qualitative data, we look at the factors that were cited as either encouraging or discouraging for both types of research.

WHAT FACTORS (DE)MOTIVATE RESEARCHERS IN FLANDERS TO CONDUCT INTERDISCIPLINARY RESEARCH?

Figure 1 indicates for each factor what proportion of postdoctoral researchers and professors perceived the factor as (very) encouraging, neutral and (very) discouraging for interdisciplinary research. First, learning opportunities, the type of topics that can be studied, personal enjoyment and satisfaction, the innovative, the intellectual challenge and to a slightly lesser extent the impact on societal challenges, access to skills, access to experts and networking opportunities **motivate** postdocs and professors to do interdisciplinary research. Indeed, a high proportion of postdocs and professors find these factors (very) encouraging (i.e. 58.1% to 90.8%) and only a small proportion experience them as (very) discouraging (0.6% to 7.6%). The proportion who perceives it as (very) encouraging is also significantly greater than the proportion who perceive the factors as neither encouraging nor discouraging (i.e., 8.6% to 35.2%).

In the interviews, the opportunity for learning and personal enjoyment and satisfaction also emerge as reasons for doing interdisciplinary research. Related to the impact on societal challenges, several researchers mention that they conduct interdisciplinary research because they believe it is the way to find solutions for societal

¹ Researchers were recruited until the interviews yielded no new information (i.e., the saturation point was reached).

problems. In addition to the list of factors from the questionnaire, personal interests, scientific curiosity, collaboration, and the audience that can be reached with interdisciplinary research also appear to be motivating factors for interdisciplinary research.

In addition, postdoctoral researchers and professors are generally **neither encouraged nor discouraged** to conduct interdisciplinary research by other researchers' attitudes toward interdisciplinary research, promotion and tenure policies and the impact of interdisciplinary research on academic job opportunities, the number of publications, the number of citations and non-academic job opportunities. Indeed, the proportion of postdocs and professors who chose the neutral response category for these factors (44.1% to 57.5%) is greater than the proportion who chose (very) encouraging (i.e., 15.8% to 31.1%) or (very) discouraging (i.e., 15.2% to 27.6%) as their response.

The evaluation system/policy for funding emerges as a **demotivating factor** as the highest proportion of postdocs and professors chose the answer categories (very) discouraging (45.7%). In line with this, interviewed researchers cited that they are discouraged from doing interdisciplinary research by the few funding channels for interdisciplinary research and the perceived low probability of getting funding for interdisciplinary research. Additionally, the difficulties in finding partners for this type of research, the perceived difficulties in conducting this type of research (e.g., getting to know other fields with their own research cultures, habits, and communication), and the lack of added value for the academic career (i.e., publications and academic job opportunities) also discourage them. Finally, the interviews point out that interdisciplinary research requires more resources (i.e., time, energy, and money), which is also demotivating.

Finally, there are several **ambivalent factors**. For example, the time required to do interdisciplinary research, institutional structure and institutional support are between a demotivating (41.2%, 45.4% and 34.6%, respectively) and neutral factor (47.4%, 39.4% and 38.8%, respectively) as approximately equal numbers of postdocs and professor selected those responses. For the funding opportunities factor, an equal number of researchers viewed the factor as (very) encouraging (38.1%) and (very) discouraging (35.9%) to engage in interdisciplinary research.

HOW DO THE (DE)MOTIVATING FACTORS FOR INTERDISCIPLINARY RESEARCH COMPARE TO THOSE FOR MONODISCIPLINARY RESEARCH?

Figure 1 also presents for monodisciplinary research the proportion of researchers who view the factor as (very) encouraging, neither encouraging nor discouraging, and (very) discouraging. Table 2 juxtaposes the findings for interdisciplinary and monodisciplinary research. Looking in the group of **factors** that were seen as **motivating for interdisciplinary research**, personal enjoyment and satisfaction (61.5%), the type of topics that can be studied (56.5%), the intellectual challenge (65.8%), the innovative (52.0%), learning opportunities (57.5%), access to experts (51.3%) and networking opportunities (49.0%) are also found to be motivating for monodisciplinary research, albeit

less pronounced than for interdisciplinary research. In addition, impact on societal challenges (45.4%) and access to skills (48.1%) are mainly perceived as neither encouraging nor discouraging for monodisciplinary research.

Next, we look at the category of **"neither encouraging nor discouraging" factors for interdisciplinary research**. This category also includes for monodisciplinary research promotion and tenure policies (55.0%) and the impact on non-academic job opportunities (61.2%) and the number of citations (54.4%). In contrast, other researchers' attitudes, impact on academic job opportunities and the number of publications are perceived as between neither encouraging nor discouraging (45.4%, 46.4% and 48.7%, respectively) and motivating (45.7%, 42.1% and 42.4%, respectively).

The evaluation system/policy for funding was mainly a **(very) discouraging factor to engage in interdisciplinary research**, but for monodisciplinary research the factor is between a neutral (39.8%) and (very) encouraging factor (44.4%). For monodisciplinary research, the limited research environment (e.g., always encountering the same people at conferences) and the experience of monodisciplinary research as boring emerge as demotivating factors.

Finally, we look at the factors that are **ambivalent in terms of motivating interdisciplinary research**. Here we find that the time required to conduct research, the institutional structure and the institutional support are perceived as more negative for interdisciplinary research (scores between demotivating and neutral), than for monodisciplinary research (scores between neutral (49.3%, 44.4% and 41.4%, respectively) and motivating (43.5%, 48.0% and 49.4%, respectively)). From the interviews, institutional structure emerged as a motivating factor for monodisciplinary research. Funding opportunities, in turn, was cited by an equal proportion of postdocs and professors as demotivating and motivating for interdisciplinary research, but the largest proportion (50.7%) of these researchers found it to be a (very) motivating factor for monodisciplinary research.

ARE THERE DIFFERENCES ACCORDING TO GENDER?

Table 3 shows for each factor the proportion of male and female postdocs and professors who consider the factor as (very) encouraging, neutral and (very) discouraging for conducting interdisciplinary research. We note that significantly more female than male researchers consider institutional support (women=35.9%; men=20.7%), other researchers' attitudes toward interdisciplinary research (women=34.4%; men=20.7%) as well as the impact of interdisciplinary research on the number of publications (women=36.6%; men=19.0%) and non-academic job opportunities (women=40.5%; men=24.6%) as (very) encouraging to conduct interdisciplinary research. For these factors, no significant differences were noted between male and female researchers for the (very) discouraging and neutral categories. Similarly, no significant differences were noted between men and women for the remaining factors.

ARE THERE DIFFERENCES ACCORDING TO CLUSTER?

Would other factors be perceived as (very) encouraging, neutral or (very) discouraging according to the science cluster of researchers? We consider this research question by dividing science cluster into STEM (natural sciences; engineering and technology; medical and health sciences; agriculture, veterinary medicine, and food sciences) and non-STEM (humanities and social sciences). When we compare STEM sciences with non-STEM sciences, we observe significant differences (see Table 3). Compared to STEM sciences, there is a higher proportion of researchers from non-STEM sciences who perceive institutional support (STEM=25.6%; non-STEM=42.7%), institutional structure (STEM=34.4%; non-STEM=56.3%) and impact on academic job opportunities (STEM=17.2%; non-STEM=36.9%) as (very) discouraging to do interdisciplinary research. For these factors, no significant differences were found between STEM and non-STEM for the (very) encouraging and neutral categories. For the remaining factors, no significant differences were also found between STEM and non-STEM researchers.

ARE THERE DIFFERENCES ACCORDING TO JOB POSITION?

Table 3 also shows for each factor the proportion of postdocs and professors who perceive the factor as (very) encouraging, neutral or (very) discouraging for conducting interdisciplinary research. Comparing the responses of postdocs with those of professors, more postdocs than professors considered the impact on non-academic job opportunities to be a (very) encouraging factor for conducting interdisciplinary research (postdocs=45.0%; professors =23.5%), while more professors than postdoctoral researchers considered the factor to be neutral (postdocs=40.5%; professors =60.8%). No other significant differences were noted for this factor. No significant differences were also noted for the other factors between postdocs and professors.

DISCUSSION

The purpose of this ECOOM-brief was to gain insight into what (de)motivates postdoctoral researchers and professors in Flanders to do interdisciplinary research. The findings in this ECOOM-brief suggest that **several factors motivate** postdoctoral researchers and professors to conduct this type of research. For example, postdocs and professors find the learning opportunities, the type of topics that can be studied, scientific curiosity, personal interest, personal enjoyment and satisfaction, the innovative, intellectual challenge, impact on societal challenges and finding solutions to these types of challenges, access to skills, access to experts, networking opportunities, audiences that can be reached, and collaboration encouraging to do interdisciplinary research. However, they experience **institutional, policy and career-related barriers** to engage in interdisciplinary research. More specifically, the evaluation system/policies for funding, funding opportunities, institutional structure, institutional support, and the impact of interdisciplinary research on academic careers demotivate

postdocs and professors in Flanders. It is also precisely these issues that the interviewed researchers point to in their answer to the question of what is lacking to do (more) interdisciplinary research in the future or what would encourage them to do it (more) in the future: separate funding opportunities with review panels aligned with interdisciplinary research, new structures that promote interdisciplinary research, and more support for conducting interdisciplinary research. In line with this, de Jonge Academie recommended providing specific funding channels for interdisciplinary research, establishing guidelines for evaluators on how to evaluate interdisciplinary project applications, providing meeting places, and balancing traditional criteria with criteria typical of interdisciplinary research when evaluating researchers (Geris & Op de Beeck, 2015). European players formulated the following recommendations: universities should consider reorganizing themselves, policies should encourage them to develop and reward interdisciplinary research programs, evaluators of interdisciplinary research applications should be trained, and a toolkit containing, for example, best practices should be developed to support researchers in conducting interdisciplinary research (Science Europe, 2018; SHAPE-ID, 2020, 2021a,b).

Looking at differences by gender, science cluster and job position, we find few differences. This means that **men and women, STEM and non-STEM scientists as well as postdocs and professors generally agree** on whether a factor motivates or demotivates interdisciplinary research. The differences that we observe relate to **institutional factors** and career factors. For example, institutional support is perceived as motivating by more female than male researchers and demotivating by more non-STEM than STEM scientists. In addition, more women than men appear to perceive the attitudes of other researchers as motivating for interdisciplinary research, while more non-STEM than STEM scientists perceive the institutional structure as demotivating.

Regarding **career factors**, more women than men appear to perceive the impact on the number of publications as motivating and more non-STEM than STEM scientists perceive the impact on academic job opportunities as demotivating. More women and postdocs than men and professors perceive the impact on non-academic job opportunities as motivating. The similarity in findings between men vs. women and professors vs. postdoc can possibly be explained by the observation that gender and function are related: the proportion of women who are postdocs (44.3%) is higher than the proportion of men who are postdocs (29.1%), while the reverse is true for professors (women=55.7%; men=70.9%). That a higher proportion of postdocs than professors experience the impact on non-academic job opportunities as motivating can possibly be explained by the fact that postdoctoral researchers keep the option of a non-academic career more open because of their often precarious position at universities (see ECOOM-brief 30). Professors, on the other hand, have more often a permanent academic position and therefore may not be focused on non-academic careers or do so to a lesser extent. ECOOM-brief 34 pointed out that we still know very little about human capital and interdisciplinary research in a Flemish context. This letter takes a step in unpacking the black box when it comes to what

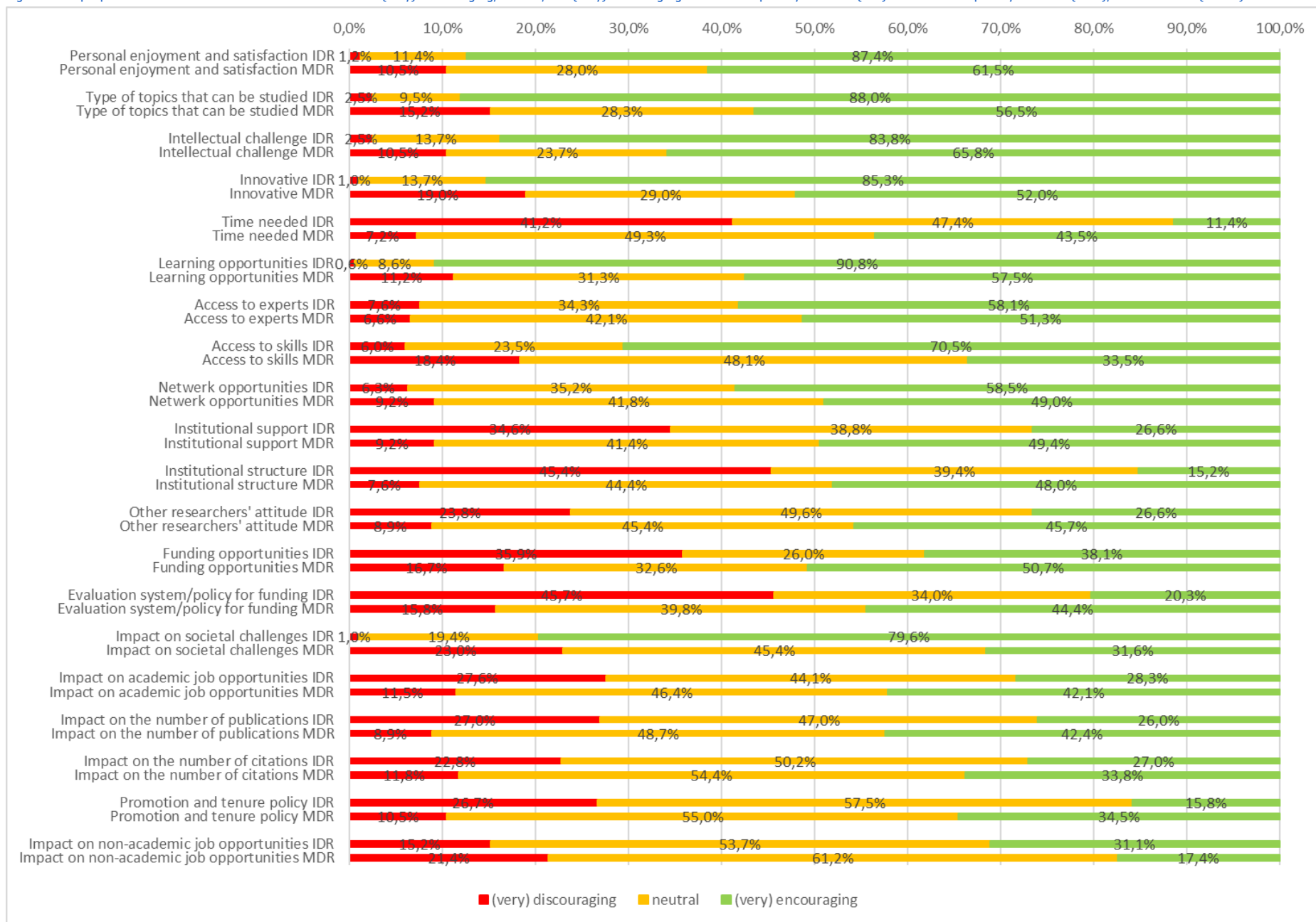
(de)motivates researchers in Flanders to engage in interdisciplinary research.

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Figure 1. The proportion of researchers that considers a factor as (very) discouraging, neutral, and (very) encouraging for interdisciplinary research (IDR) and monodisciplinary research (MDR), Flanders 2023 (N=315)



Note. Items with 'IDR' refer to the answers for the items in relation to interdisciplinary research. Items with 'MDR' refer to the answers for the items in relation to monodisciplinary research.

Tabel 2. Categorisation of the factors for both interdisciplinary and monodisciplinary research, Flanders 2023 (N=315)

	Interdisciplinary research	Monodisciplinary research
Encouraging	Learning opportunities Type of topics that can be studied Personal enjoyment and satisfaction Innovative Intellectual challenge Impact on societal challenges Access to skills Access to experts Network opportunities	Learning opportunities Type of topics that can be studied Personal enjoyment and satisfaction Innovative Intellectual challenge Access to experts Network opportunities Funding opportunities
Neither encouraging, nor discouraging	Attitudes of other researchers Promotion and tenure policy Impact on academic job opportunities Impact on the number of publications Impact on the number of citations Impact on non-academic job opportunities	Promotion and tenure policy Impact on the number of citations Impact on non-academic job opportunities Impact on societal challenges Access to skills
Discouraging	Evaluation system/policy for funding	
Between discouraging and neutral	Time needed Institutional structure Institutional support	
Between neutral and encouraging		Attitudes of other researchers Impact on academic job opportunities Impact on the number of publications Evaluation system/policy for funding Time needed Institutional structure Institutional support
Encouraging = discouraging	Funding opportunities	

Table 3. The proportion of researchers that considers a factor as (very) discouraging, neutral, and (very) encouraging for interdisciplinary research according to gender, science cluster and job position, Flanders 2023 (N=315)

		Sample (N=315)	Male (N=179)	Female (N=131)	STEM (N=180)	non-STEM (N=103)	Postdoc (N=111)	Professor (N=204)
Personal enjoyment and satisfaction	(very) discouraging	1,2%	1,7%	0,8%	1,1%	1,9%	2,7%	0,5%
	neutral	11,4%	13,4%	8,4%	13,9%	10,7%	9,0%	12,7%
	(very) encouraging	87,4%	84,9%	90,8%	85,0%	87,4%	88,3%	86,8%
Type of topics that can be studied	(very) discouraging	2,5%	3,4%	1,5%	2,8%	2,9%	2,7%	2,5%
	neutral	9,5%	12,3%	5,3%	10,0%	9,7%	9,0%	9,8%
	(very) encouraging	88,0%	84,4%	93,1%	87,2%	87,4%	88,3%	87,7%
Intellectual challenge	(very) discouraging	2,5%	2,8%	2,3%	3,9%	1,0%	5,4%	1,0%
	neutral	13,7%	15,1%	10,7%	15,6%	13,6%	11,7%	14,7%
	(very) encouraging	83,8%	82,1%	87,0%	80,6%	85,4%	82,9%	84,3%
Innovative	(very) discouraging	1,0%	1,1%	0,8%	1,7%	0,0%	2,7%	0,0%
	neutral	13,7%	17,3%	7,6%	10,6%	19,4%	14,4%	13,2%
	(very) encouraging	85,3%	81,6%	91,6%	87,8%	80,6%	82,9%	86,8%
Time needed	(very) discouraging	41,2%	37,4%	45,8%	41,1%	39,8%	44,1%	39,7%
	neutral	47,4%	52,5%	41,2%	45,6%	50,5%	47,7%	47,1%
	(very) encouraging	11,4%	10,1%	13,0%	13,3%	9,7%	8,1%	13,2%
Learning opportunities	(very) discouraging	0,6%	1,1%	0,0%	1,1%	0,0%	0,9%	0,5
	neutral	8,6%	10,1%	6,1%	10,0%	8,7%	7,2%	9,36
	(very) encouraging	90,8%	88,8%	93,9%	88,9%	91,3%	91,9%	90,2
Access to experts	(very) discouraging	7,6%	8,4%	6,9%	8,3%	7,8%	11,7%	5,4%
	neutral	34,3%	34,1%	32,8%	30,6%	36,9%	30,6%	36,3%
	(very) encouraging	58,1%	57,5%	60,3%	61,1%	55,3%	57,7%	58,3%
Access to skills	(very) discouraging	6,0%	6,1%	4,6%	6,1%	6,8%	4,5%	6,9%
	neutral	23,5%	25,7%	19,8%	19,4%	30,1%	18,0%	26,5%
	(very) encouraging	70,5%	68,2%	75,6%	74,4%	63,1%	77,5%	66,7%
Network opportunities	(very) discouraging	6,3%	8,4%	3,1%	4,4%	10,7%	7,2%	5,9%
	neutral	35,2%	36,9%	32,8%	30,6%	39,8%	43,2%	30,9%
	(very) encouraging	58,5%	54,7%	64,1%	65,0%	49,5%	49,5%	63,2%
Institutional support	(very) discouraging	34,6%	37,4%	30,5%	25,6%*	42,7%*	30,6%	36,8%
	neutral	38,8%	41,9%	33,6%	43,3%	37,9%	36,9%	39,7%
	(very) encouraging	26,6%	20,7%*	35,9%*	31,1%	19,4%	32,4%	23,5%
Institutional structure	(very) discouraging	45,4%	46,4%	42,7%	34,4%*	56,3%*	44,1%	46,1%

	neutral	39,4%	40,2%	38,9%	46,1%	35,0%	36,0%	41,2%
Attitude of other researchers	(very) encouraging	15,2%	13,4%	18,3%	19,4%	8,7%	19,8%	12,7%
	(very) discouraging	23,8%	28,5%	16,8%	21,1%	25,2%	17,1%	27,5%
	neutral	49,6%	50,8%	48,9%	52,2%	45,6%	54,1%	47,1%
Funding opportunities	(very) encouraging	26,6%	20,7%*	34,4%*	26,7%	29,1%	28,8%	25,5%
	(very) discouraging	35,9%	39,1%	29,8%	29,4%	37,9%	31,5%	38,2%
	neutral	26,0%	26,3%	26,7%	26,7%	29,1%	22,5%	27,9%
Evaluation system/policy for funding	(very) encouraging	38,1%	34,6%	43,5%	43,9%	33,0%	45,9%	33,8%
	(very) discouraging	45,7%	49,2%	41,2%	37,2%	50,5%	40,5%	48,5%
	neutral	34,0%	33,5%	34,4%	38,3%	33,0%	36,0%	32,8%
Impact on societal challenges	(very) encouraging	20,3%	17,3%	24,4%	24,4%	16,5%	23,4%	18,6%
	(very) discouraging	1,0%	1,1%	0,8%	1,1%	0,0%	0,9%	1,0%
	neutral	19,4%	22,3%	15,3%	19,4%	19,4%	16,2%	21,1%
Impact on academic job opportunities	(very) encouraging	79,6%	76,5%	84,0%	79,4%	80,6%	82,9%	77,9%
	(very) discouraging	27,6%	27,9%	26,0%	17,2%*	36,9%*	26,1%	28,4%
	neutral	44,1%	48,0%	38,9%	47,8%	39,8%	36,9%	48,0%
Impact on the number of publications	(very) encouraging	28,3%	24,0%	35,1%	35,0%	23,3%	36,9%	23,5%
	(very) discouraging	27,0%	28,5%	22,1%	22,2%	30,1%	24,3%	28,4%
	neutral	47,0%	52,5%	41,2%	47,2%	46,6%	49,5%	45,6%
Impact on the number of citations	(very) encouraging	26,0%	19%*	36,6%*	30,6%	23,3%	26,1%	26,0%
	(very) discouraging	22,8%	24,0%	19,1%	18,9%	25,2%	18,0%	25,5%
	neutral	50,2%	51,4%	49,6%	50,0%	52,4%	54,1%	48,0%
Promotion and tenure policy	(very) encouraging	27,0%	24,6%	31,3%	31,1%	22,3%	27,9%	26,5%
	(very) discouraging	26,7%	27,4%	23,7%	20,0%	33,0%	24,3%	27,9%
	neutral	57,5%	57,5%	58,8%	60,0%	56,3%	55,0%	58,8%
Impact on non-academic job opportunities	(very) encouraging	15,8%	15,1%	17,6%	20,0%	10,7%	20,7%	13,2%
	(very) discouraging	15,2%	16,8%	13,0%	14,4%	14,6%	14,4%	15,7%
	neutral	53,7%	58,7%	46,6%	54,4%	58,3%	40,5%*	60,8%*
	(very) encouraging	31,1%	24,6%*	40,5%*	31,1%	27,2%	45%*	23,5%*

Note. Percentages with a * differ significantly from one another on the $p < .01$ level.