



Curiosity did not kill the cat: It made it stronger and happy, but only if the cat was not “dark”

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ABSTRACT

Objective: The present research explores the path between work-related curiosity and positive affect. To justify this relationship, we rely on the conservation of resources theory (COR) and include performance as a mediator of the curiosity-positive affect path, such that curiosity was expected to stimulate performance, resulting in higher positive affect. We also aimed to explore whether the Dark Triad personality would moderate this mediating path.

Methodology: Three studies were conducted. Study 1 analyzed the indirect path of curiosity on positive affect through performance ($n = 241$). Study 2 resorted to two samples, one with participants in telework ($n = 406$), and the other one with participants in face-to-face work ($n = 240$), to explore the mediated link. Study 3 ($n = 653$) explored the moderating role of the Dark Triad traits (Machiavellianism, psychopathy, and narcissism) on the mediated relationship.

Findings: Study 1 demonstrated that curiosity boosted positive affect through performance. Study 2 showed that, when workers were in telework, the mediated relationship occurred, however the same did not happen in face-to-face work. Study 3 showed that Machiavellianism and psychopathy moderated the indirect effect of curiosity on positive affect through performance, in a way that it was present for individuals low on these traits, but not for individuals high on such traits. Narcissism did not moderate the mediated relationship.

Implications: We discuss the impact that curiosity may have on behavioral and affective consequences (performance and affect), and the role that personality may have on this relationship.

1. Introduction

Interest in curiosity has increased in the past years. Curiosity appears to be particularly important in today's VUCA (volatile, uncertain, complex, and ambiguous) world. Specifically, work environments are full of accelerated uncertainty and organizations must train employees to creatively deal with such changes in order to survive (Bennett & Lemoine, 2014).

Curiosity enables and drives exploration, leading to enhanced imagination and fostering the cognitive capability to creativity. Moreover, it influences workers to actively seek the answers to problems or unexpected situations at work, which might benefit performance. Research on the relationship between curiosity and job performance appears to be crucial for organizational settings. Despite this, there are

few studies focused on the relationship between curiosity and performance, and the existing studies have focused on the operationalization of human curiosity, and do not analyze work-related curiosity.

The present research aims to contribute to the expanding of knowledge about work-related curiosity and its relations with performance and affect. Thus, this research answers the call for empirical work that studies the role of curiosity in organizational life in general (e.g., Harvey et al., 2007) and the links between curiosity, positive outcomes at work (Harrison et al., 2021), and personality variables.

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2. A curious path between curiosity, performance, and positive affect

2.1. Curiosity and positive affect

Curiosity has been defined as the propensity to seek out novel, complex and challenging interactions with the world (Kashdan et al., 2018). It drives exploration in response to unexpected problems and events due to the need to reduce uncertainty and, at the same time, create a sense of mastery (Litman, 2008). It has been showed that curiosity has a motivational nature that influences learning, knowledge acquisition and life fulfillment (Kashdan et al., 2020). In the long run, consistently acting on curious feelings tends to expand knowledge and build intellectual and creative capacities (Von Stumm & Ackerman, 2013). Thus, curiosity is an added value to work and organizations. Mussel (2013) has argued that curiosity enables adaptability to organizational changes, makes individuals more open to what is new (individuals, ideas, technologies) and fosters flexibility when there is the need to change something.

Recently, studies on work-related curiosity have identified four dimensions (for more details, see Kashdan et al., 2020): (1) Joyous Exploration (feeling happy when looking for new solutions, ideas and experiences); (2) Deprivation Sensitivity (until problems are solved); (3) Stress Tolerance (the perceived ability to tolerate the anxiety of confronting the new), and (4) Openness to People's Ideas (social curiosity).

The personality research has investigated the impact of curiosity on key personal outcomes, such as well-being (e.g., Kashdan & Steger, 2007), however there are few studies focused on the impact of curiosity in the workplace (Kashdan et al., 2020). Overall, this stream of the literature has suggested that curiosity is conducive to positive outcomes (Kashdan et al., 2018). For example, curious individuals were found to be associated with decreased symptoms of depression and anxiety (Kaczmarek et al., 2014), higher levels of motivation, life satisfaction, well-being and meaning in life (Peterson et al., 2007).

Conservation of resources theory (COR) provides important insights in this respect, as it suggests that the value of resources, such as the curiosity underlying effective behaviors (i.e., performance) (Hobfoll, 2001) will protect and maintain individuals' resources. The theory suggests that individuals try to maintain and protect their own resources, and the more favorable the work environment, the more resources they can get and maintain (Hobfoll, 2001). As a result, resources serve to build more resources, which improve the individuals' functioning. Curiosity, by stimulating exploratory behaviors, driving adaptability to unpredictable changes and events, may trigger social and personal resources that promote well-being and positive affect in the workplace (Kashdan et al., 2018). Moreover, the openness to other's ideas, as well as the stress tolerance to what is unknown (as explained by Kashdan et al., 2020) and unexpected, appear to enhance individuals' job satisfaction and their levels of work engagement. The stress tolerance enables individuals to craft their jobs in new, innovative, and creative forms, which leads to enhanced well-being (Kashdan et al., 2020). The joy felt when exploring new ideas, or solutions, predicted behavioral indicators of creative problem-solving and performance (Hardy et al., 2017). And the interest in other's ideas stimulates healthy work relationships, and satisfaction (Kashdan et al., 2018). Overall, this line of reasoning suggests that higher levels of curiosity would create a set of personal resources, allowing employees to experience more frequently positive affect in their work.

2.2. Performance as a mediating mechanism

People are curious about several things and life domains. In a modern, volatile, uncertain, complex and ambiguous world of work, curiosity aims to facilitate learning as a way of adaptation to these constant and unpredictable changes. According to Loewenstein (1994) information gap theory, curiosity is enhanced when there is a perceived gap

between what one knows, and what one wants to know. Thus, curiosity appears to deliver behaviors that may enhance performance, for example, through the active search of new information, to better understand the work environment, being open to new knowledge and ideas, which may improve the ability to solve problems and deal with complex theories (Litman & Spielberg, 2003). For example, Collins et al. (2004) showed that curiosity was triggered by complex ideas (e.g., scientific theories), that lead the individual to ask questions or look for information to obtain knowledge.

In the workplace, curiosity delivers the joy when exploring, enhances the focus on complex problems to solve due to the deprivation sensitivity, enables the openness to other's ideas, and fosters the resilience and ability to manage stress that is required to pursue the new, uncertain, complex, and ambiguous (Kashdan et al., 2020). A curious person is responsive to organizational changes, when needed, tend to feel happy and enthusiastic when try to understand, new colleagues and technologies, are adaptable to the unfamiliar and do not stress when they face unexpected events (Neubert et al., 2015).

Some researchers have demonstrated that curious individuals respond positively to organizational changes by suppressing frustration and being flexible to new technologies, others and experiences, in general (Mussel, 2013). Regarding job performance, curious individuals have shown to be open to feedback, from colleagues and supervisors, and to, constantly, seek improvements (Neubert et al., 2015). Curiosity is also closely related to proactivity, flexibility, and adaptability to the unknown (Harrison & Dossinger, 2017). Such flexibility is closely linked to higher performances (Reio & Callahan, 2004).

Thus, work-related curiosity appears to be an important antecedent of seeking new knowledge, motivation to learn (Mussel, 2013), and idea generation (Hardy et al., 2017). It has also been linked to other positive outcomes, such as organizational commitment (Mussel & Spengler, 2015), innovation and creativity (Kashdan et al., 2020). There is also some evidence of the positive relationship between curiosity and performance (Celik et al., 2016). For example, some authors argued that curiosity boosts performance, because curious workers tend to explore the unknown, tend to proactively seek feedback, ask more frequently questions when they do not understand, and tend to effectively cope with ambivalent feedback from coworkers and supervisors (Harrison & Dossinger, 2017). In a similar vein, work-related curiosity appears to stimulate proactivity and job crafting, due to its exploratory nature (Wang et al., 2019). Based on these findings, we expect that curiosity would be positively related to job performance.

By performing well, individuals tend to feel better with themselves and with the world around. Higher performances produce affective reactions that can positively impact people's lives. There are theories that describe curiosity as a positive affective experience that is strongly influenced by motivation (e.g., Sansone & Thoman, 2005). Curiosity, by promoting focus in novel and challenging situations, results in the accrual of knowledge and social resources (Fredrickson, 2001), which enhances workers' performance, that, as a result promote well-being (Fredrickson, 2013; Kashdan et al., 2004). In this research we argue that curiosity by stimulating job performance, will enhance the individuals' positive affect experienced in the workplace.

2.3. The moderating role of the Dark Triad

Levels of dark personality traits tend to vary in the general population. Dark Triad (DT) has been defined as a set of three dark personality traits: psychopathy; Machiavellianism and narcissism (Paulhus & Williams, 2002), known to be socially aversive, and when combined appear to be extremely damaging and destructive both for the individual and for those around them. Machiavellianism is based on three interrelated values: (1) a belief that only manipulating others, one achieves something; (2) a cynical view of human nature; (3) an amoral perspective that overrates convenience above the principle (O'Boyle et al., 2012). Psychopathy is characterized by impulsivity and is related to the

individuals' suppression of their needs (Cleckley, 1951; Hare, 1999); a constant search for emotion; low levels of empathy and anxiety (Spain et al., 2014); and a belief in their superiority that leads to self-promotion tendencies (LeBreton et al., 2006; Lynam & Widiger, 2007). Finally, narcissism is marked by an inflated vision of the own self, including its success, control, and self-esteem; and a constant search for the recognition from others, that will feed the individual's self-esteem (O'Boyle et al., 2012).

Research on the dark personality has increased in the past decade (e.g., Jonason et al., 2012), specifically its influence on work-related behaviors, such as aggression and violence (Cohen, 2016). Research has demonstrated that the DT is related to low affective empathy (Pajević et al., 2018), strong motives for self-enhancement, achievement, power, money, hedonism (Balakrishna et al., 2017), counterproductive and coercive behaviors at work (O'Boyle et al., 2012); active prowling, game playing, practical utility, avoidant attachment style (Alavi et al., 2018); and immature defense mechanisms (Richardson & Boag, 2016). In the workplace, some studies have showed that the Dark Triad traits predict negative work-related behaviors, such as gossip, procrastinating or being focused on other things rather than work (e.g., social networks), cyberbullying (e.g., Furnham, Hyde, & Trickey, 2013; Jones et al., 2021).

While this growing research has contributed substantially to the understanding of the dark side of individuals, other growth-oriented outcomes at work, have largely been unexplored, such as work-related curiosity and performance (Kaufman et al., 2019).

As mentioned earlier, curiosity appears to be related with higher levels of performance (e.g., Kashdan et al., 2018). Individuals with high DT traits may see the positive link between curiosity and performance mitigated (Judge et al., 2006; Zettler & Solga, 2013) because their focus of curiosity may not be on the task at hand, but on the intrinsic goals inherent to such dark traits, such as power or hedonism (Wisse et al., 2015). The existing studies on these topics are not consistent and present controversial results, arguing, for instance, that the relation, between the DT and performance, is not always negative, instead it may be positive in the short term, but mostly negative in the long term (Furnham et al., 2014; Furnham, Richards, & Paulhus, 2013).

The potential role of the DT between curiosity and job performance is complex. It may change according to the context and with the short-term reward, perceived by the 'dark individual' (see Blickle & Schütte, 2017; Kosson, 1996). This statement is supported by the Trait Activation Theory (Tett & Guterman, 2000), which refers to the activation of specific behaviors of a given trait, based on the interpretation of the situation, and on the inherent gains of it. Within the DT, it could result in an increased desire to triumph in order to establish a social domain (Jones & Figueredo, 2013).

Even though the assumed relevance of personal characteristics on job performance, so far there are not many studies exploring the relationship between curiosity, Dark Triad, and performance, in one model together. Thus, with the aim to expand the knowledge about the potential interaction between curiosity and the DT, regarding its effect on performance, we defined our third hypothesis. The exploratory nature of curiosity, makes an individual want to do more, looking actively for answers, solving problems, which result in better performances. However, the Dark Triad, due to its negative nature, can lead curious individuals to focus on other issues, rather than their focus on the tasks at hand, deteriorating their performance. Thus, even if individuals are curious when having high scores of their dark traits, it may influence them to canalize their resources and efforts into other interests and behaviors, rather than performance.

2.4. Overview of studies

We conducted three studies to test our hypothesis. Study 1 tested performance as a mediator of the relationship between curiosity and positive affect. Study 2 analyzed the mediating model with two samples,

one with teleworkers, and the other with non-teleworkers. Study 3 added the DT as a moderator of the well-established mediating path (Fig. 1). Based on the empirical evidence, we defined the following hypothesis.

Hypothesis 1. Curiosity will have a positive relationship with positive affect.

Hypothesis 2. Performance will mediate the positive effect of curiosity on positive affect.

Hypothesis 3. The DT traits (narcissism, Machiavellianism, psychopathy) will moderate the relationship between curiosity and performance, such that the lower the dark trait, the stronger the positive relationship between curiosity and performance.

3. Study 1: curiosity boosts positive affect through performance

3.1. Method

3.1.1. Participants and procedure

A total of 241 employed individuals participated in this study. Participants were from the inland zone of Portugal and, some of them, had management roles (23%) or technical ones (77%). On average, participants were 39.36 years old ($SD = 9.55$), and the majority was female (74%; $n = 178$). Regarding school education, the majority had a university degree (63%), followed by those who had the secondary degree (34%). Most participants were in socioeconomic status considered mean-low (61%), followed by those who perceived themselves as belonging to a mean-high socioeconomic status (32%). Moreover, the participants lived, in majority with their husband/wife and child's (65%), and the median of children was 1 ($M = 1.40$; $SD = 0.89$). The mean organizational tenure was 10.65 years ($SD = 9.66$), and the mean function tenure was 9.22 years ($SD = 8.56$).

We contacted employees from 150 organizations, from different job sectors (health, education, and services). From the 150 organizations, 89 accepted to participate. Participants were contacted via an internal email sent by the head of the human resources department of the organizations that agreed to participate in the study. The recruiting email explained the main goals of the study (to study work-related behaviors), gave guarantees of anonymity, and provided a hyperlink that redirected the participants to the online survey. From the 300 emails sent, there were 241 valid responses, which means an 80% response rate. The confidentiality and anonymity, of the participants, was warranted before they agree to participate in the study.

3.1.2. Measures

To measure *curiosity*, we used the multidimensional workplace curiosity scale (Kashdan et al., 2020). It included 12 items that assessed joyous exploration (e.g., "I get excited thinking about experimenting with different ideas"), deprivation sensitivity, (e.g., "I work relentlessly to find answers to complicated questions at work"), stress tolerance (e.g., "I do not shy away from the unknown or unfamiliar even if it seems scary"), and openness to people's ideas (e.g., "I like to hear ideas from colleagues even if they are different from my current line of thinking"). Participants answered on a 5-point Likert scale (1- never; 5 - daily) ($\alpha = 0.92$).

To measure *performance*, we used the 6-item In-Role Performance Scale (Abramis, 1994) (e.g., "I managed to plan my work so that it was done on time") and contextual performance (six items, e.g., "I took initiative at work"). The responses were given using the 5-point Likert scale (1 "very bad" to 5 "very good"). The overall scale showed an α of 0.94.

To measure *positive affect*, we used the 8-item Multi-Affect Indicator (Warr et al., 2014), that assessed the frequency of positive affective experiences at work, on the past 24 h (e.g., "enthusiastic"). Participants answered on a 5-point Likert scale (1 - never; 5 - always). The scale

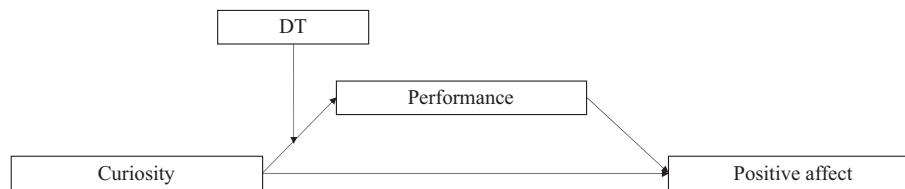


Fig. 1. The hypothesized moderated mediation model.

showed an α of 0.87.

3.1.3. Data analysis

Descriptive and correlation analysis were conducted through SPSS. To test hypotheses 1 and 2, we used model 4 from PROCESS (Hayes, 2018). This analysis calculated the direct paths between the variables, in the form of regression weights, and the significance of the indirect path, which is the reduction of the relation between curiosity and positive affect (H1) when the mediator (performance) is included in the model (H2).

3.2. Results

Table 1 provides the descriptive statistics, correlations, and reliabilities of the study variables.

3.2.1. Hypothesis 1

Hypothesis 1 predicted that curiosity would be positively related to positive affect. A regression analysis showed that curiosity was a positive and significant predictor of positive affect ($\beta = 0.22, p < .01$), and explained 4% of its variance ($p < .01$). Thus, hypothesis 1 was supported by the data.

3.2.2. Hypothesis 2

Hypothesis 2 predicted that the relationship between curiosity and positive affect would be mediated by performance. We performed a mediation analysis through model 4 (PROCESS, Hayes, 2018). Mediation exists when the predictor ($X =$ curiosity) influences the criterion variable ($Y =$ positive affect) through a mediating variable ($M =$ performance).

The indirect effect of curiosity on positive affect through performance was 0.09 ($p < .01$), with 95% CI [0.03, 0.15], indicating a significant mediation effect. The relationship between curiosity and performance ($B = 0.27, p < .01$) and the relationship between performance and positive affect ($B = 0.33, p < .01$) were significant. The total effect ($B = 0.21, p < .01$) between curiosity and positive affect, and its relationship after introducing performance ($B = 0.12, p < .05$), were significant, revealing a partial mediation effect (Fig. 2). Thus, H2 was supported.

3.3. Discussion

The aim of the first study was to analyze the path between curiosity and positive affect, and whether this would be mediated by individual performance. The results supported our two hypothesis and

Table 1
Means, standard deviations, and correlations between the variables (Study 1).

	M	SD	1	2	3
1. Curiosity	3.63	0.77	(0.92)*		
2. Performance	3.98	0.75	0.28**	(0.94)	
3. Positive affect	3.15	0.75	0.22**	0.36**	(0.87)

Notes: $N = 241$; Cronbach's α are in brackets.

* $p < .05$.

** $p < .01$.

demonstrated that: (1) being curious at work triggers positive affect, but (2) this relationship is mediated by performance. That is, curiosity led to higher levels of positive affect. Moreover, individuals who scored higher in curiosity, performed better at work, which triggered them to experience more positive affect, while working. These results indicate that curiosity boosts performance and workers' positive affect.

Study 1 allows for some confidence in the relationship between curiosity, performance and positive affect, however this study was focused on one national region (inland zone of the country), and in presential work. As such, Study 2 assessed whether curiosity would motivate positive affect, through performance, in a telework setting, and includes participants from the east coast of the country.

4. Study 2: performance mediates the effect of curiosity on positive affect: an analysis with teleworkers and non-teleworkers

Study 2 tested hypotheses 1 and 2 with two samples, from the east coast of Portugal (Lisbon), one with participants in telework settings, and the other with participants in face-to-face work.

4.1. Participants and procedure

We followed the same steps of study 1 to gather participants. Thus, we contacted 45 organizations from different occupational sectors (health, services, finance, and banks), from the east coast. Overall, 32 agreed to participate in the study. The head of the human resources department of the organizations that agreed to participate in the study, sent an internal email to their workers. This email gave guarantees of their anonymity and provided a hyperlink that redirected them to the survey. From the 1000 emails sent, there were 406 valid responses from teleworkers, and 240 from face-to-face ones, which meant a 65% response rate.

4.1.1. Sample 1

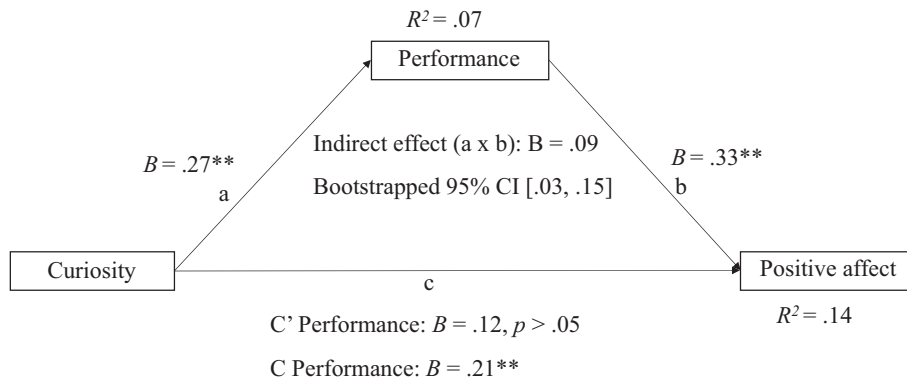
Four hundred and six teleworkers (254 women and 152 men) took part in the study ($M_{age} = 32.73$ years, $SD = 10.17$; $M_{tenure} = 7.51$, $SD = 9.94$). Most of them were in a full model of telework (61%), and the others in a hybrid model (39%). In average, participants worked 38 h per week ($SD = 11.06$), and some of them had management roles (31%) or technical ones (69%). Some participants had children (39%; Median = 1; $M_{child} = 1.29$, $SD = 2.89$), most of them had a university degree (77%) and were in a mean-low socioeconomic status (53%).

4.1.2. Sample 2

We collected data among 240 employers in face-to-face work, from different job sectors (59% women and 41% men) took part in the study ($M_{age} = 35.25$ years, $SD = 11.45$; $M_{tenure} = 8.62$, $SD = 11.28$). In average, participants work 37.53 h per week ($SD = 14.84$), and some of them had management roles (25%). Some participants had children (45%; Median = 1, $M_{child} = 1.61$, $SD = 2.06$), most of them had a university degree (51%) and were in a mean-low socioeconomic status (58%).

4.1.3. Measures

To measure curiosity, we used the same scale of study 1 (Kashdan



** $p < .01$ (non-standardized regression coefficients with 5000 Bootstrapped Samples)

Fig. 2. The mediated model of curiosity on positive affect via performance (Study 1).

et al., 2020).

To measure *performance*, we used two items retrieved from the Individual Work Performance Questionnaire (Koopmans et al., 2013). The items measure performance, over the last day (e.g., “I managed to plan my work so that it was done on time”). The responses were given using the 5-point Likert scale (1 “seldom” to 5 “always”).

To measure *positive affect*, we used the same scale from study 1 (Warr et al., 2014).

4.1.4. Data analysis

Descriptive and correlations were conducted through SPSS, and to test hypotheses 1 and 2, we used model 4 from PROCESS (Hayes, 2018).

4.2. Results

Means, standard deviations, alpha reliability coefficients, and correlations between the constructs, from each sample, are reported in Table 2.

4.2.1. Hypothesis 1

Hypothesis 1 predicted that curiosity would be positively related to positive affect.

4.2.1.1. Sample 1. A regression analysis showed that curiosity was a positive and significant predictor of positive affect ($\beta = 0.44, p < .01$), and explained 19% of its variance ($p < .001$).

4.2.1.2. Sample 2. We found that curiosity positively and significantly predicted positive affect ($\beta = 0.43, p < .001$), and explained 18% of its variance ($p < .001$). Thus, hypothesis 1 was supported by the data.

4.2.2. Hypothesis 2

Hypothesis 2 predicted that the relationship between curiosity and positive affect would be mediated by performance. We performed a mediation analysis through model 4 (PROCESS, Hayes, 2018).

4.2.2.1. Sample 1. The indirect effect of curiosity on positive affect through performance was 0.01 ($p < .05$), with 95% CI [0.005, 0.03], indicating a significant mediation effect. The relationship between curiosity and performance ($B = 0.14, p = .01$) was significant, but the relationship between performance and positive affect ($B = 0.06, p > .05$) was non-significant. The total effect ($B = 0.45, p < .001$) between curiosity and positive affect, and its relationship after introducing performance ($B = 0.44, p < .001$), were significant, revealing a partial mediation effect (Fig. 2). Thus, H2 was supported.

4.2.2.2. Sample 2. We did not test the mediation effect since curiosity and performance, at the bi-variate level, were not correlated.

4.3. Discussion

This study aimed to consolidate findings from study 1, with two additional samples. We found that curiosity stimulates the frequency of positive affect at work, and this result was significant on both samples. Thus, the fact that curiosity has a direct path to positive affect appears to be a consolidate finding. However, in this study, the mediating path was only found in teleworkers. In face-to-face work, there is no evidence for the mediating path between curiosity and positive affect via performance. This might be explained because we used a different measure for performance, with only two items, with a weak (even though significant) correlation among them. This might have influenced such results (Fig. 3).

However, we need a third study to understand better the mediating pathway, and we have yet to test hypothesis 3, that is, the moderation hypothesis of Dark Triad in the relationship between curiosity and performance. Therefore, in Study 3, we continue to build our evidence, that curiosity plays a key role in positive affect and further explicate the underlying behavioral process – performance – that explains this effect.

5. Study 3: the Dark Triad moderates the mediated relationship of curiosity on positive affect through performance

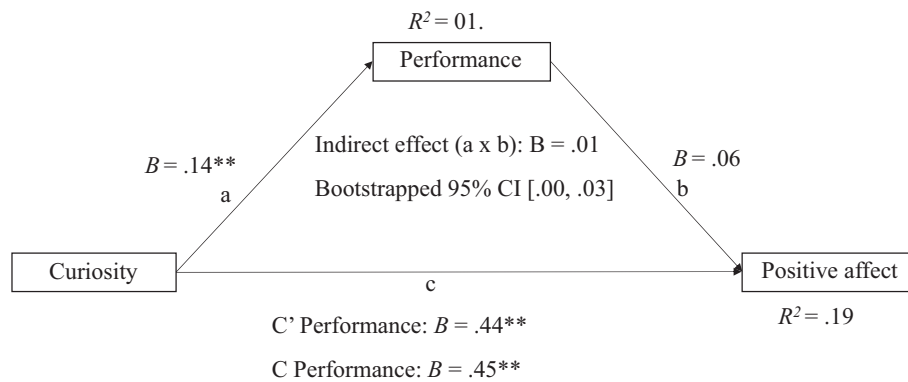
This final study sought to investigate whether the Dark Triad

Table 2
Means, standard deviations, and correlations between the variables (Study 2).

	M_1	SD_1	1	2	3	M_2	SD_2	1	2	3
1. Curiosity	3.76	0.67	(0.92)			3.67	0.67	(0.91)		
2. Performance	3.45	0.83	0.12*	(0.27)		3.12	0.85	0.05	(0.24)	
3. Positive affect	3.30	0.69	0.44**	0.12*	(0.86)	3.41	0.67	0.43**	-0.10	(0.89)

Notes: $N_{sample1} = 406; N_{sample2} = 240$.

* $p < .05$.
** $p < .01$.



** $p < .01$ (non-standardized regression coefficients with 5000 Bootstrapped Samples)

Fig. 3. The mediated model of curiosity on positive affect via performance (Study 2, Sample 1).

moderates the effect of curiosity on performance, and thus tested hypothesis 3.

5.1. Participants and procedure

Overall, 653 employed individuals participated in the study. On average, participants were 33.63 years old ($SD = 10.71$), and the majority was female (61%). Regarding school education, the majority had a university degree (67%), followed by those who had the secondary degree (30%). Most participants were in a mean-low socioeconomic status (54%), followed by those who perceived themselves as belonging to a mean-high socioeconomic status (40%). Moreover, the participants lived, in majority with their husband/wife and child's (38%). The median number of children was 1 ($M = 1.4$, $SD = 2.63$). The mean organizational tenure was 8 years ($SD = 10.5$), and they worked, in average, 37.91 h ($SD = 12.59$).

We contacted 30 organizations from different job sectors (namely, health, education, administration, and banks), from which 23 agreed to participate. Participants were contacted via an internal email sent by the head of the human resources department of the organizations that agreed to participate in the study. The recruiting email explained the main goals of the study (to study work-related behaviors), gave guarantees of anonymity, and provided a hyperlink that redirected the participants to the online survey. From the 800 emails sent, there were 653 valid responses, which means an 82% response rate. The confidentiality and anonymity, of the participants, was warranted before they agree to participate in the study.

5.1.1. Measures

To measure *curiosity*, we used the same scale of study 1 (Kashdan et al., 2020).

To measure *performance*, we used three items from the Individual Work Performance Questionnaire (Koopmans et al., 2013).

To measure *positive affect*, we used the same scale from study 1 (Warr et al., 2014).

To measure the *DT*, we used the Dirty Dozen (Jonason & Webster, 2010). This scale includes 12 items, divided in three dimensions: narcissism (e.g., "I tend to manipulate others to get what I want"), psychopathy (e.g., "Usually, I don't feel remorse") and Machiavellianism (e.g., "I tend to look for status or prestige"). Participants answered on a 5-point Likert scale (1-totally disagree; 5-totally agree).

5.1.2. Data analysis

Descriptive and correlations were conducted through SPSS, and to test the hypotheses 3, we split it in two phases. First, we tested the isolated moderation effect of the DT traits on the relationship between

curiosity and performance, through model 1 on PROCESS. Then, we tested the full moderated mediation model with PROCESS, model 7 (Hayes & Rockwood, 2020).

5.2. Results

Table 3 provides the descriptive statistics, correlations, and reliabilities of the study variables.

5.2.1. Hypothesis testing

Hypothesis 3 predicted that the DT traits would moderate the relationship between curiosity and performance, such that the lower the dark trait, the stronger the positive relationship between curiosity and performance.

5.2.1.1. Machiavellianism. The first analysis revealed a significant interaction effect, such that the association between curiosity and performance was stronger for those low in Machiavellianism ($B = -0.11$, $\beta = 0.05$, $\Delta R^2 = 0.02$, $p = .04$). That is, for individuals with low levels of Machiavellianism ($-1 SD$), performance increased, when curiosity also increased ($B = 0.35$, $\beta = 0.07$, $p < .001$, CI 95% [0.21, 0.48]). The same pattern was found for individuals with mean scores ($B = 0.27$, $\beta = 0.06$, $p < .001$, CI 95% [0.15, 0.38]). However, in the case of individuals with higher Machiavellianism ($+1 SD$), the interaction, between it and curiosity, was not significant ($B = 0.15$, $\beta = 0.08$, $p > .05$, CI 95% [-0.01, 0.32]).

Then, we tested the overall moderated mediation model. The findings showed a significant moderated mediation index of -0.11 with a CI 95% [-0.22, -0.01]. This significant index evidenced that the mediated effect (performance) was conditional upon the levels of the moderator (Machiavellianism). That is, the indirect effect was significant at lower levels of the moderator ($-1 SD$ ($B = 0.13$, $\beta = 0.04$, $p < .01$, CI 95% [0.06, 0.22])). However, the mediating effect was no longer significant, when Machiavellianism was higher; $+1 SD$ ($B = -0.00$, $\beta = 0.01$, $p > .05$, CI 95% [-0.04, 0.01]). Specifically, for individuals low on Machiavellianism, the indirect effect was present, while it was not present for individuals high on Machiavellianism traits (Fig. 4).

5.2.1.2. Psychopathy. The first analysis revealed a significant interaction effect, such that the association between curiosity and performance was stronger for those low in psychopathy ($B = -0.22$, $\beta = 0.06$, $\Delta R^2 = 0.05$, $p < .001$). Thus, for individuals with low and mean levels of psychopathy, performance increased, when curiosity also increased ($B = 0.44$, $\beta = 0.08$, $p < .001$, CI 95% [0.29, 0.58]; $B = 0.38$, $\beta = 0.07$, $p < .001$, CI 95% [0.25, 0.51], respectively). However, in the case of individuals with high psychopathy ($+1 SD$ above the mean), the interaction, between psychopathy and curiosity, was no longer significant ($B =$

Table 3
Means, standard deviations, and correlations between the variables (Study 3).

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Curiosity	3.73	0.67	(0.92)					
2. Performance	3.33	0.85	0.10**	(0.58)				
3. Positive affect	3.34	0.71	0.43**	0.02	(0.88)			
4. Machiavellianism	1.74	1.05	0.04	-0.08	0.02	(0.91)		
5. Psychopathy	1.67	0.86	-0.03	-0.07	-0.02	0.59**	(0.79)	
6. Narcissism	2.31	1.06	0.15*	-0.05	0.05	0.59**	0.47**	(0.89)

Notes: *N* = 653. Cronbach's α are in brackets.

* $p < .05$.

** $p < .01$.

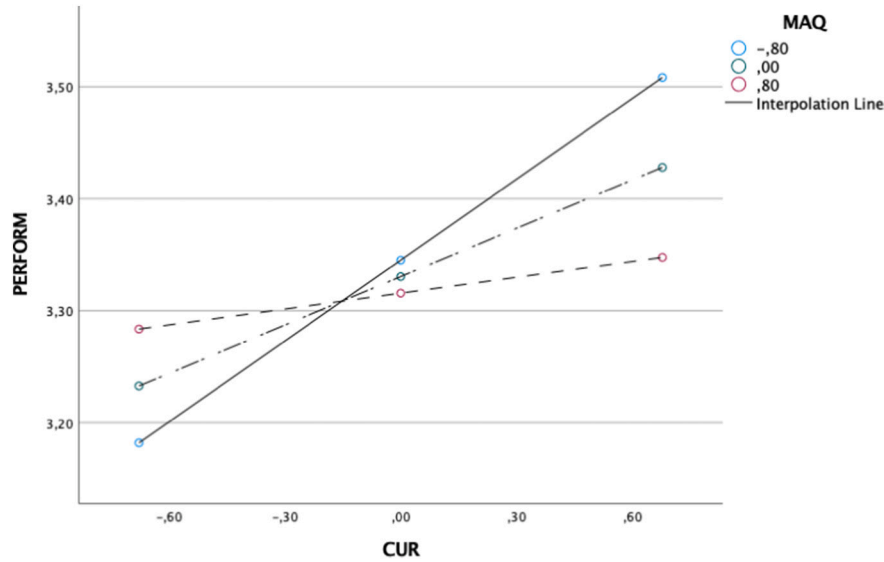


Fig. 4. The moderating effect of Machiavellianism on the relationship between curiosity and performance (Study 3).

0.11, $\beta = 0.07$, $p > .05$, CI 95% [-0.04, 0.25]).

Regarding the moderated mediation model, the results showed a significant moderated mediation index of -0.06 with a CI 95% [-0.11, -0.02]. This significant index evidenced that the mediated effect (performance) was conditional upon the levels of the moderator (psychopathy). That is, the indirect effect was significant at the lower and mean

levels of psychopathy (-1 SD ($B = 0.11$, $\beta = 0.04$, $p < .01$, CI 95% [0.04, 0.19]); M ($B = 0.10$, $\beta = 0.03$, $p < .01$, CI 95% [0.04, 0.16])). However, the mediating effect of performance on the relationship between curiosity and positive affect was no longer significant, when psychopathy was higher; +1 SD ($B = 0.02$, $\beta = 0.02$, $p > .05$, CI 95% [-0.02, 0.07]). Specifically, for individuals low on psychopathy, the indirect effect was

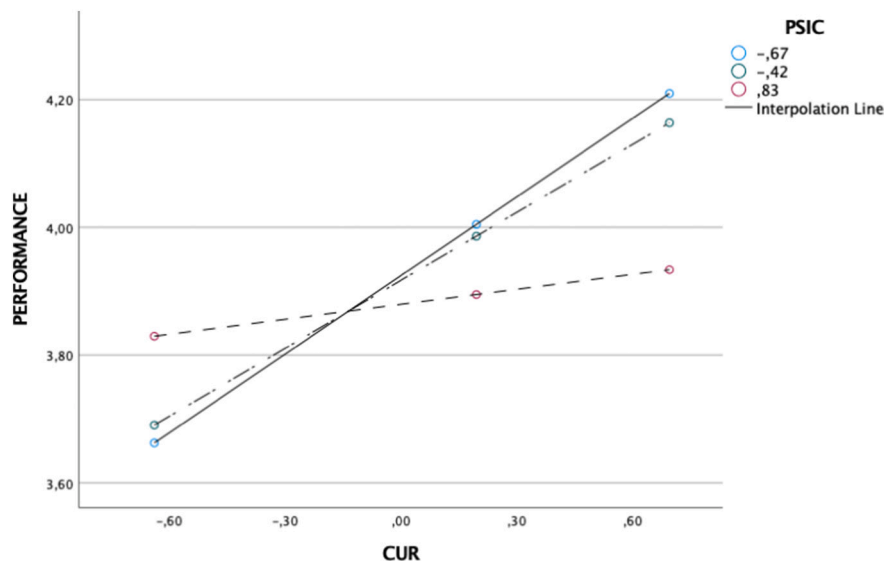


Fig. 5. The moderating effect of psychopathy on the relationship between curiosity and performance (Study 3).

present, while it was not present for individuals high on psychopathy (Fig. 5).

5.2.1.3. Narcissism. The first analysis revealed a significant interaction effect, such that the association between curiosity and performance was stronger for those low in narcissism ($B = -0.13, \beta = 0.05, \Delta R^2 = 0.01, p < .01$). Thus, for individuals with low to mean levels of narcissism ($-1 SD$), performance increased, when curiosity also increased ($B = 0.23, \beta = 0.06, p < .001, CI\ 95\% [0.10, 0.35]$; $B = 0.11, \beta = 0.05, p < .001, CI\ 95\% [0.01, 0.21]$, respectively). However, in the case of individuals with high narcissism ($+1 SD$), the interaction was no longer significant ($B = -0.01, \beta = 0.07, p > .05, CI\ 95\% [-0.15, 0.13]$).

After that, we tested the overall moderated mediation model, but the findings showed a non-significant moderated mediation index ($0.01, CI\ 95\% [-0.00, 0.02]$). Thus, our third hypothesis was partially supported.

5.3. Discussion

This study makes some key contributions regarding the role of the DT traits in the mediated link between curiosity and positive affect via performance. The results showed that the mediating path, found in study 1, and partially in study 2, is conditional upon the levels of Machiavellianism and psychopathy, such that the mediating path is no longer significant when individuals score high on these dark traits. However, we did not find this pattern for narcissism. Even though the single interaction between narcissism and curiosity in predicting performance, it did not moderate the mediating effect. This leads to some relevant findings as two of the DT traits appears to buffer the positive effect of curiosity on performance, and positive affect. Individuals who score higher on psychopathy, and Machiavellianism do not benefit from being curious, regarding their performance at work, and in the long run, to positive affect (Fig. 6).

6. General discussion

In a world, where work contexts are increasingly volatile, uncertain, complex, and ambiguous (VUCA), there is increased value in identifying personality characteristics that best predict who will be the most efficient and happier at work. Despite this, research has neglected the role of curiosity in relation to work-related outcomes. However, given the VUCA world, and its impact on work, it can be expected that curiosity will become more and more important regarding work-related outcomes, such as performance. As Mussel (2013) emphasized, curiosity is

more important nowadays, than it used to be, and its significance is likely to increase, rather than to decline. In the present research, we aimed to extend knowledge about work-related curiosity and its influence on work-related outcomes. We aimed to demonstrate that: (1) curiosity is an antecedent of positive affect, (2) performance is a behavioral process through which positive affect is enhanced by curiosity, and (3) the dark personality buffers the positive path between curiosity, performance, and positive affect.

First, the results support that curiosity is an antecedent of positive affect, as the present research demonstrates that ‘being curious, does not kill the cat’, instead it makes the individual to feel better and happily. We found, in the three studies, that people with greater curiosity-trait tend to frequently experience positive affective states. Fredrickson et al. (2008) argued that curiosity is a characteristic that makes the individual become more engaged with novel and challenging stimuli and situations, which results in higher levels of well-being. Other works demonstrated that a predisposition to curiosity leads to diverse well-being indicators, such as satisfaction, engagement and meaning in life (e.g., Kashdan & Steger, 2007). Thus, there is plenty evidence that high curiosity appears to promote well-being (Kashdan et al., 2018).

However, our findings go beyond the direct path between curiosity and positive affect. We demonstrate that curiosity leads to greater performance that, in turn, results in more frequent positive affective experiences. As such, people that score higher on curiosity tend to perform better, which results in enhanced positive affect. This highlights that curiosity, known to expand knowledge and skills (Mussel, 2013), motivating behaviors to explore the world around, translates into higher performances, which is of particular importance, both for workers, and organizations. This result may be understood in the light of the conservation of resources theory (Hobfoll, 2001). Accordingly, individuals strive to maintain and protect their own resources, and curiosity may be conceived as a personal resource. By developing it further, it will allow the individual to expand their resources which will result in positive behaviors at work, such as performance. As such, people with greater curiosity, engage in more frequent task-oriented behaviors and feel more satisfied with it.

This mediated path between curiosity, performance and positive affect may also be understood in the light of the behavioral congruence model (Côté & Moskowitz, 1998). Accordingly, individuals obtain positive affective experiences (e.g., satisfaction) when performing activities that fit with their habitual behavior tendencies (i.e., curiosity characteristic) (Côté & Moskowitz, 1998). Based on the behavioral congruence model, people high in curiosity, by being allowed to explore and to

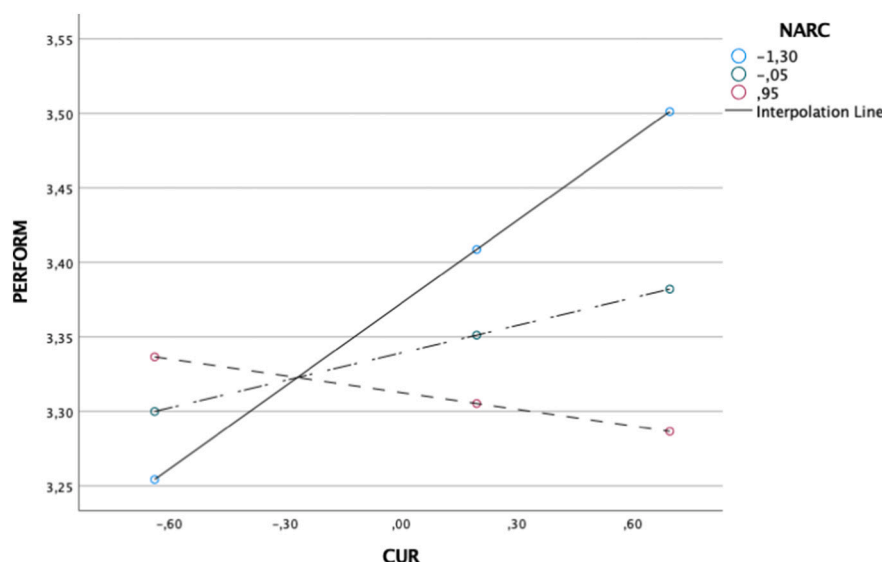


Fig. 6. The moderating effect of narcissism on the relationship between curiosity and performance (Study 3).

expand their skills and knowledge at work, will perform better, once their behavior is congruent to their personality, which will make them to feel better at work. Notably, in the second study, we find a barely statistically significant mediating effect for sample 1, and a non-significant mediating path for sample 2. This might be related to the measure used to assess performance as we used only two items that demonstrated to be weakly related with each other ($0.24 > r < 0.27$). In addition, sample 2 encompassed diverse conservative jobs that do not allow the individual to explore at work. From a practical point of view, this is of particular interest because, in these environments, individuals do not improve their performance, by being curious, but it delivers their positive affect anyway. Thus, it is likely that individuals high in trait curiosity, canalize their tendencies to explore other areas, such as work-related relationships. This would explain why curiosity did not improve performance but stimulated positive affect anyway.

After revealing the importance of curiosity for performance and positive affect, we examined the extent to which the three dark traits, Machiavellianism, psychopathy, and narcissism, acted as potential buffers of the positive mediating path. The DT has been found to predict some work-related behaviors, such as counterproductive work behaviors or performance (Cohen, 2016). We expected that, individuals who scored higher on their dark traits would not benefit from being curious, regarding their performance. Consistent with the hypothesized model, the mediating relationship between curiosity and positive affect through performance is significant, only for individuals who were low or average in two dark traits – psychopathy and Machiavellianism. Individuals who score higher on psychopathy and Machiavellianism appear to remain the same regarding performance, when curiosity is higher, while individuals who score lower on these two dark traits, see their performance increase when curiosity is higher. Machiavellianism is described as the tendency to manipulate and exploit others, and a focus on self-interest and deception and psychopathy is characterized by antisocial behavior, impulsivity, selfishness, callousness, and remorselessness (Paulhus & Williams, 2002). Curious individuals, high in Machiavellianism and psychopathy, are likely to invest their effort in other exploration behaviors, in the workplace. For instance, some studies have showed that the Dark Triad traits predict negative work-related behaviors, such as gossip, procrastinating or being focused on other things rather than work (e.g., social networks), cyberbullying (e.g., Furnham, Hyde, & Trickey, 2013; Jones et al., 2021). This might explain why, dark personalities, even when curious, do not see their performances increase. On the other hand, narcissism, which is characterized by an inflated self-view, a vanity, arrogance egotism and a lack of empathy present different findings. First, it does not moderate the mediating path between curiosity and positive affect, via performance, as expected. However, when we look at the slopes of the simple moderation, we can see that performance decreases when curiosity increases for those who score high on their narcissism trait. Narcissists by having an inflated self-view might lose the benefits of being curious at work, as they might engage in explorative behaviors towards themselves, or something related to their self-success. Thus, a positive side (curiosity), with a negative one (narcissism), appears to result in negative behaviors. This has been demonstrated empirically. For instance, Özsoy (2018) demonstrated that narcissism was a significant predictor of self-success. Moreover, narcissists feel they always outperform their fellow co-workers so that rules about reciprocity and obligation do not apply to them (Furnham & Treglow, 2021). Thus, by feeling their performance is better than others, they may allow to some distractions at work, to satisfy their curiosity and make something to their own pleasure (e.g., engage in interpersonal conversations about personal achievements). Diverse studies focused on the link between the DT traits and performance (LeBreton et al., 2018) evidenced inconclusive findings. For instance, O'Boyle et al. (2012), in their meta-analysis on the relationship between the DT traits and performance, evidenced that both Machiavellianism and psychopathy were significant predictors of performance, but Narcissism was not. Özsoy (2018) evidenced that psychopathy and

Machiavellianism predicted counterproductive work-behaviors, but narcissism presented the weakest correlation. So, it is unclear whether this result regarding narcissism might be evidence of the tendency to engage in impression management behaviors or self-delusion. So far, the data appears to evidence that individuals who score high on narcissism can be problematic in the workplace because of their focus on themselves rather than their team or the organization (Furnham, 2021). Spurk et al. (2016) emphasized that whether individuals engage in poorer performances seems to depend on the type of their dark traits.

Overall, we demonstrate that curiosity, the tendency to explore and seek novelty tendencies, increases work-related behaviors that facilitates performance, and delivers positive affect. However, this only occurs if Machiavellianism and psychopathy scores low. Thus, the present research demonstrates that 'being curious, does not kill the cat', instead it makes it stronger, and happy. However, if the cat is a 'dark one', then the curiosity indeed kills the cat.

6.1. Theoretical and practical implications

This research allows concluding that curiosity is an important variable for the prediction of work-related behavior, and affective states in the workplace. Furthermore, given the volatility, uncertainty, complexity and ambiguity that characterizes the world of work, the importance is likely to rise, rather than to decline, which has important implications for organizational theories and applied purposes, such as personnel selection. The likelihood that a person will perform well, may be assessed, even in an indirect way, through work-related curiosity. The results of this study are straightforwardly useful for managers, who can find here evidence that using a measure of curiosity will help in the – albeit indirect – assessment of performance, and that such is true across three studies.

In addition, managers may also consider these results for training practices, in this case in curiosity. Stimulating curiosity tendencies and behaviors may lead to adaptive work behaviors, that result in better performances. For instance, it should be interesting, from a practical point of view to create "curiosity days" in which individuals could expand their limits by being allowed to explore and create.

This research has also some implications for research on work-related curiosity. When curiosity is stimulated, and individuals experience better performances, and enhanced positive affect, organizations also benefit from this symbiose, and have an increased probability of functioning closer to optimality in the short and long term (e.g., Luthans, 2002).

6.2. Limitations and future directions

Despite the positive features of this research, there are some limitations to acknowledge, some of which open avenues for further research on curiosity in the workplace. First, it is difficult to know from the design used in the three studies, if there is a causal relationship between curiosity, performance and positive affect, as the studies are correlational in nature. Future studies should use an experimental design to manipulate curiosity and understand whether curiosity causes enhanced performance, and positive affect. Second, the use of self-reported measures, may also limit the results reliability. In addition, the use of a self-reported performance measure is also a limitation, because it is very easy to report that one's own performance is superior, and without other reports to corroborate this, it is impossible to know whether this is accurate. Thus, future studies should combine self-reported measures of performance with objective ones (e.g., supervisor evaluations).

Future research should explore daily curiosity and its impact in other work-related outcomes, such as daily creativity and innovation. Moreover, future studies might examine whether there is a feedback loop between daily curiosity and positive affect. If curiosity benefits affective responses, as we have shown, it may be that the enhanced positive

affect, brought about by curiosity, in turn, makes individuals even more curious, which then feeds back into future cycles, through the affective process. That is, the affective process itself may engender curiosity by raising new questions about novel associations, creating a positive spiral of curiosity and affect.

Additionally, the role that organizational culture has on the path curiosity-performance should be explored. As mentioned before, the results from study 2 demonstrated a non-significant mediation of performance on the curiosity-positive affect link, in sample 2, and a barely statistically significant effect in sample 1. This might be due to a potential conservative organizational culture, and formalized tasks procedure. However, future studies should clarify this and use other performance measures to test the model.

Declaration of competing interest

The authors declare that they have no conflicts of interest.

Acknowledgements

- i) Compliance of ethical standard statement: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.
- ii) Informed consent: Informed consent was obtained from all individual participants involved in the study.
- iii) Data availability: The data is available only upon reasonable request to the authors.

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