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Working Paper Nº 2021-01

From emotion to motivation: the role of social support for researchers[*]

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Abstract: *Motivation is essential to meet targets. With this in mind, appropriate emotion management is likely to help problem-coping and personal implication in task fulfilment— and thus motivation. This challenge is of great importance for researchers, whose profession relies to a great extent on intrinsic, prosocial motivation rather than the extrinsic kind. However, the complex chain of mechanisms leading from emotion management to motivation remains unexplored, so here we analyse the complex underlying process using survey answers from over 7,000 Spanish researchers. Self-emotion appraisal, one dimension of emotional intelligence, actually improves motivation, but perceived social support is necessary to trigger this link. In other words, for self-emotion appraisal to be effective, researchers need to feel others' support in confronting a problem. We also reveal that self-deceptive enhancement fosters the effect of self-emotional appraisal on social support, i.e. the need to adapt one's self-image to others' expectations activates the pursuit of social support. The implications of self-emotional appraisal and social support in motivation are then discussed, as well as the role that self-deception plays in social support perceived by a person in science.*

Keywords: *self-emotional appraisal; social support; intrinsic and prosocial motivation; self-deceptive enhancement; psychology of science*

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Introduction

Advanced knowledge plays a significant role in contemporary, science-based society as a source of wealth and an engine for economic development (Lehtinen, McMullen, & Gruber, 2019). A person in science (Grosul & Feist, 2014) has cognitive, psychological, motivational, emotional and contextual characteristics that guide the direction of their work (Araújo, Cruz, & Almeida, 2017; Lounsbury et al., 2012; Lubinski, Benbow, Shea, Eftekhari-Sanjani, & Halvorson, 2001). That is why quality scientific research is found among researchers with a particular combination of attributes that are not only cognitive, but also non-cognitive (Lubinski et al., 2001) such as motivation and emotions.

The people involved in the work can act based on internal and prosocial reasons, as well as external ones. Indeed, in keeping with the theory of self-determination, people involved in a task have a high level of autonomy if they find the activity itself satisfying (Ryan & Deci, 2000). Also, the theory of self-determination provides a conceptual framework regarding motivation in specific areas such as learning, the business world and sports, which explains changes in behaviour and the level of commitment to the task to achieve the goals set (Ryan, Vansteenkiste, & Soenens, 2019).

This theory stresses intrinsic motivation, referring to the desire to make an effort due to the interest and well-being that the activity itself creates. Thanks to this situation of well-being, an optimal state of commitment and autonomy regarding the task is reached (Gagné & Deci, 2005; Ryan & Deci, 2000). Prosocial motivation can also play a part, focussing more on the desire to work for the good of others and to contribute to their well-being (Grant, 2007). Material incentives and extrinsic motivation are absent in both intrinsic and prosocial motivation, and the latter two ending up mutually reinforcing each other (Kroll & Porumbescu, 2019).

Research into what fosters scientific quality has analysed aspects such as curiosity (Jindal-Snape & Snape, 2006), creativity (Grosul & Feist, 2014; Tahamtan & Bornmann, 2018), creativity and motivation (Zhu, Gardner, & Chen, 2018), values (Sato, 2016), personality (Lounsbury et al., 2012) and emotional and motivational processes (Araújo et al., 2017; Jindal-Snape & Snape, 2006). Taking into account this theoretical context, this study specifically aims to analyse the role of social support as a mediator between self-knowledge of emotion and motivation in people who work in advanced knowledge.

Furthermore, this article aims to contribute to the preceding research with an analysis on the role of social support in the relationship between self-emotional appraisal and motivation. Within emotional processes, the importance of strategies geared towards emotional control and positive internal dialogue has been observed (Araújo et al., 2017), which can be boosted by good self-knowledge of emotions. Within the context of emotional intelligence theory, people with adequate knowledge and management of their own emotions tend to keep up good interpersonal relationships and to seek social support (Bucich & MacCann, 2019) for instrumental or emotional reasons (Goldenberg, Matheson & Mantler, 2006) because the favourable results will have repercussions on an individual and collective level (Portes, 1998). That is why social support networks can provide a source of encouragement and strength to go on working to achieve goals, giving emotional relief and tranquillity in a comfortable environment (Holt-Lunstad & Smith, 2012). Moreover, people cope better with challenges and process information better when they have access to social interlocutors (Bauer, King & Steger, 2019).

These principles are consistent with the Social Baseline Theory (Beckes & Coan, 2011) on the benefits to be gained by sharing work to increase the results and reduce the costs of environmental demands. The social context itself can strengthen an individual's ability

to overcome adversity. Hence, one specific aim of this research is to analyse the role of social support in the relationship between emotional self-appraisal and motivation.

In this relationship, individual beliefs influenced by what is socially acceptable have been taken into account. To do so, the role of self-deceptive enhancement (SDE) has been included in the analysis. SDE refers to the tendency to give socially acceptable responses that are unconsciously driven, unintentional and based on more assumed and internalised judgements (Paulhus, 1984; Holtgraves, 2004; Leng, Huang & Yao, 2019). It takes into account the respondents' sensitivity towards possible answers to the questions asked in the evaluation and decision-making process that are more distant from social expectations or from what is considered socially acceptable (Leng et al., 2019). The process of recollection may even be due to a decrease in the memorising and recall process (Belli, Traugott, Young & McGonagle, 1999). This study has proven that the answers to more sensitive items reflecting intimate attitudes may be insufficient but close to what is socially acceptable (Krumpal, 2013). Therefore, following Krumpal (2013), the intention on introducing this variable is to address the responses that respondents find socially desirable and internalise, as well as the possible underestimations of less desirable content. Until now, the effects of self-deception have been researched in some emotional spheres such as emotion regulation, anxiety and depression (Arndt, Hoglund & Fujiwara, 2013; Broomhall & Phillips, 2018). However, there are no studies that analyse the effects of self-deception on emotional self-appraisal. For this reason, this study aims to look into the moderating role of self-deception in the relationship between self-emotional appraisal, social support and motivation.

In view of the preceding scientific documentation, this study also aims to analyse the relationships between self-emotional appraisal and intrinsic, prosocial motivation, taking into account the mediating role of social support and the moderating role of self-

deception as a variable that can alter the relationships between the variables in the model designed. Until now this model has barely been studied, and even less so in the scientific community. The results could provide valuable information as regards the commitment of person in science to a task (Grosul & Feist, 2014).

Theoretical background and hypotheses

In view of the aims stated above, in this section we will now give the reasons for the model analysed. Fig. 1 shows the relationships proposed, including the hypotheses, which are formulated in the following sections.

Figure 1

Theoretical model
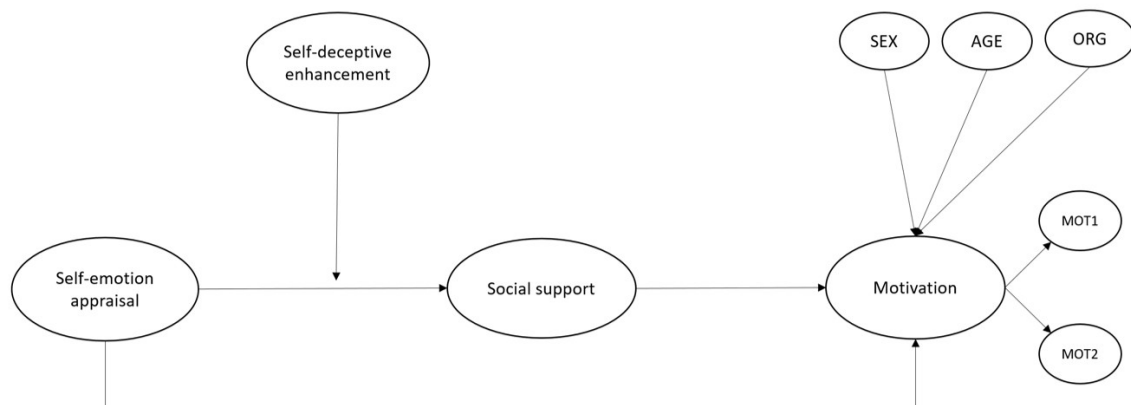
Org= Organisation; Mot 1= Intrinsic motivation; Mot 2= Prosocial motivation

Self-Emotional Appraisal and Motivation

In general, motivation consists of the psychological process by which an action is initiated in a task and the duration, intensity and way that the commitment to the task is determined (Grant, 2008). Hence, it can be understood to be the energy that drives a person to outline a plan based on objectives to achieve the goals (Ryan & Deci, 2000). In the context of this article, motivation requires confidence in the research itself and in the ability to improve the work, while progress is made by advancing interactively, with cognitions, actions, motivations and emotions intervening (O'Shea, Buckley & Halbesleben, 2017).

The strength lending energy to the activity can be based on intrinsic or prosocial motivation. Within the context of the theory of self-determination (Ryan & Deci, 2000), the person progressively sets the course of the actions autonomously. The activity itself produces well-being and is stimulating, which can stem from internal well-being arising from the activity being carried out or from personal satisfaction for having contributed to the well-being of others. Both kinds of motivation require freedom and autonomy in a process of self-regulation (Gagné & Deci, 2005; Ryan & Deci, 2000). This way of acting leads to being more effective in the work on experiencing internalised emotions of vitality (Ryan & Bernstein, 2004) and by fostering behaviours related to why it is important to act and how one should function (Arieli, Grant & Sagiv, 2014).

Research has shown that personal commitment to a task can come about through intrinsic or prosocial motivation (De Dreu, 2006) and that prosocial motivation can be more effective when it is coupled with intrinsic motivation (Grant, 2008). Both types of motivation produce personal satisfaction, stimulating commitment to the work (Magnano et al., 2016). They arise autonomously and are related to the freedom of self-regulation

(Gagné & Deci, 2005). With them, people get involved in the work and experience a positive emotional state, fostered by self-knowledge of emotion (Abid, Sajjad, Elahi, Farooqi & Nisar, 2018).

Within the theory of emotional intelligence (EI), knowledge of one's own emotions is essential in the ability to perceive, express, understand and manage them effectively, helping thought processes to regulate emotions with reflection. All of this helps foster emotional and intellectual growth (Mayer, Caruso & Salovey, 2016; Mayer, Salovey and Caruso, 2004) and thus build emotional self-awareness.

In general, emotional intelligence and more specifically self-knowledge of emotions enables people not only to have accurate thoughts about their emotions, but also to carry out constructive activities in their own work (Mayer, Roberts, & Barsade, 2008), dynamic and intrapersonal in nature (Dalal, Bhave, & Fiset, 2014). All of this can help overcome difficulties before and during the decision-making process (Santos, Wang, & Lewis, 2018). From this perspective, knowing one's own emotions can help in managing them in stressful situations and when working under pressure. Firstly, this is because self-knowledge of emotions is related to job performance, motivation and individual productivity (Lopes, Grewal, Kadis, Gall & Salovey, 2006). Secondly, it is because knowing one's own emotions can help in the development and integration of professional identity in a mature, responsible way (Akerjordet & Severinsson, 2007). Thirdly, self-emotional knowledge can also help maintain better interpersonal relationships (Van Roo & Viswesvaran, 2004).

To sum up, individual behaviour can benefit from the self-emotional appraisal of emotions in order to improve results for the individual and the group or organisation in which they work (Groves, McEnrue & Shen, 2008; Jung & Yoon, 2012; Lu & Kuo, 2016). Among other aspects, this may be due to the fact that knowledge of one's

emotions helps carry out the task and to develop personal interactions and the search for social support (Bucich & MacCann, 2019).

In any case, self-emotional knowledge seems to be especially related to jobs that require high commitment and emotional involvement (Wong & Law, 2002), as is the case of researchers involved in scientific projects. Therefore, researchers must be able to count on non-cognitive resources such as emotional ones in order to tackle the difficulties involved in the complex process of research activity.

Work on advanced knowledge has twofold support. On the one hand, there is the individual side, meaning the personal, cognitive and emotional characteristics that are necessary to formulate and pursue the goals in a motivated, internalised and self-determined way (Ryan & Deci, 2000; 2020). Internalised, autonomous motivation arises from the person identifying as a scientist (Skinner, Saxton, Currie, & Shusterman, 2017). On the other hand, there is the social and support side of receptive networks (Bucich & MacCann, 2019), which will be described in the next section. Based on the preceding research, we have formulated Hypothesis 1, referring to the relationships between self-emotional appraisal and motivation.

Hypothesis 1: Self-emotional appraisal will have a positive effect on motivation.

Social Support, Self-Emotional Appraisal and Motivation

Based on cognitive evaluation theory (CET), people have a need to feel competent and autonomous. That is why the individual and social factors that foster these feelings of competence and autonomy boost intrinsic motivation (Gagné & Deci, 2005). Scientists' job is to increase advanced knowledge and from that perspective a commitment to

knowledge is more effective when the task is taken on autonomously and internalised as such, in other words when it is identified (Gagné & Deci, 2005) and the person is able to understand their own emotions (Ahmad, Seleim, Bontis & Mostapha, 2017) as a fundamental pillar of emotional intelligence (Mayer, Caruso & Salovey, 2000). In addition, peer support can help performance and with it, knowledge (Kulkarni, Ravindran, & Freeze, 2006). Even so, Wang, Clay & Forsgren (2015) did not manage to demonstrate that support from colleagues increases intrinsic motivation.

It is also worth taking into account community resilience, understood to mean a community's capacity to foster collective action to overcome the adverse effects of situations. In other words, it includes the attitudes, beliefs and behaviours of the people that make up the community or collective (Pfefferbaum et al., 2013). Community resilience, therefore, refers to social support from the community or collective of people with common aims, which is essential for physical and psychological well-being (Sippel, Pietrzak, Charney, Mayes & Southwick, 2015).

Taking into account the principle of economy of action, social relationships serve the function of energy-saving, contributing to activities geared towards achieving the goals set out (Beckes & Coan, 2011). Hence, the possibility that researchers will be more efficient increases when they are integrated in social networks that pursue common goals (Feeney & Collins, 2015). Research activity requires effort and confidence in the task, as well as patience in work with uncertain outcomes. Feeling social support can increase the capacity to overcome adversity, given that shared efforts tend to reduce the individual's workload and increase people's point of convergence (Gross & Proffitt, 2013). Results arising from group work also have consequences on both individual and collective levels (Portes, 1998). In addition, social support can be a factor for personal protection when faced with difficulties. It can have favourable repercussions on establishing strategies in

the face of adversity (Vanhove, Herian, Pérez, Harms & Lester, 2016). Social support can also boost motivation, fundamentally when it responds to the group's needs and objectives in a way that is not very visible in situations of ongoing work as in the case of advanced knowledge (Zee, Cavallo, Flores, Bolger & Higgins, 2018).

The capacity to operate in social networks with common goals is related to motivation on an individual and group level, which helps draw up a plan to achieve satisfactory results (Ryan & Deci, 2000). This connection can be strengthened when those involved do not recognise it as such; when it is subtler and acts invisibly, reducing the anguish that can arise when visible support is given (Zee et al., 2018). In fact, the results as regards visible support are contradictory. On the one hand, it has been observed that visible support can bring with it a sense of uselessness and lack of competence in the person receiving it (Rafaeli & Gleason, 2009). On the other, people with a lot of energy to initiate visible support activity can be beneficial in pressing on until the target is achieved (Zee et al., 2018). In the wake of the preceding research, it is worth considering that visible and invisible social support can be beneficial for advanced knowledge that requires a boost to initiate action and provide the strength to reach the target in a sustained effort over time.

In general, it could be said that when social support drives towards a task shared by the group, it tends to offer opportunities for personal growth and covers the needs of both those receiving support and those driving it, so that it is motivational and everybody plays a part in the same social support (Feeney & Collins, 2015).

This may be relevant because research work encourages people to take on complex tasks of increasing difficulty that require persistence, creativity and effort, yet which do not give external compensation (Wright & Grant, 2010; Kroll & Porumbescu, 2019). This is the basis for Hypothesis 2.

Hypothesis 2: Social support plays a mediating role in the relationship between self-emotion appraisal and motivation.

Self-Emotional Appraisal, Self-Deceptive Enhancement and Social Support

Good emotional knowledge about oneself helps stimulate the task ahead. Knowledge of one's strengths and weaknesses helps people to take on responsibilities and carry them out in keeping with their possibilities. Such people are able to seek knowledge resources and networks to help carry out specific constructive tasks in a sustained way until the expected overall result is achieved (Mayer et al., 2008). Nevertheless, sometimes when relating to others, people try to show that they fit in with socially acceptable norms and tend to conceal their more intimate feelings (Elliot et al., 2018; Paulhus, 1991).

In the context of the rational choice theory (RC theory), it can be assumed that the probability that the survey interviewee will reply honestly depends on the expected risks and losses resting on the reply (Becker, 2006). Based on this premise, a person may intend to show more positive aspects that have been unconsciously internalised and assumed (Paulhus, 1984; Elliot et al., 2018). That is why the masking of the reply may not be completely intentional, but may be due to an internalised belief. From that point of view, internalised beliefs and the tendency to soften replies to give them a more positive, socially acceptable spin are taken up internally as their own, which is known as deceptive enhancement (Gravdal & Sandal, 2006; Paulhus, 1984). Information with interference from self-deception is internalised and needs less time to give a reply, so it may be connected with self-deceptive judgements (Holtgraves, 2004). Such judgements connect with the process of re-composing information and are linked to the recuperation and

selection of the reply (Leng et al., 2019). Hence, they are internalised, non-intentional judgements and may be prone to interference from memory lapses (Paulhus, 2002).

It should not be overlooked that the level to which participants tend to mask their replies may have repercussions on the results obtained, above all when they emphasise replies suited to social expectations that are socially acceptable (Hart, Ritchie, Hepper & Gebauer, 2015). Self-deception is linked to active coping and seeks a connection with others, avoiding criticism (Gravdal & Sandal, 2006). Furthermore, it plays a fundamental role in choosing replies. Nevertheless, it is not clear whether self-deception works as a bias or rather it may be connected to a person's positive functioning (Tracey, 2016). On the one hand, it has been demonstrated that people with high scores in self-deception tend to use self-representation strategies driven by the need for power or admiration (Paulhus, 2002). On the other, self-deception is positively related to measures for psychological health and better personal performance (Gravdal & Sandal, 2006). It is also related to intrinsic motivation in the sports sphere (Legrain, Paquet, D'Arripe-Longueville & Antonini Philippe, 2011) with motivation for achievement, including the goals of dominance and performance, and with the fear of failure (Elliot et al., 2018). The underlying research question is whether or not showing a more positive image of oneself based on internalised beliefs has positive effects on social support and motivation.

To answer it, we have formulated the third research hypothesis:

Hypothesis 3: Self-deceptive enhancement will play a moderating role in the relationship between self-emotional appraisal and social support.

Method

Procedure

This study is part of a broader project that includes a survey with psychological, sociodemographic, professional, organisational and institutional data. It is aimed at researchers who are published in scientific journals, including *Web of Science* from 2013 to 2016, registered with Spanish organisations. A link to the online survey was sent to 65,000 valid e-mail addresses of researchers. On sending them, we used the criterion that they should be corresponding authors. The choice of corresponding authors has the advantage of picking researchers with an important role, i.e. they are strong contributors to the content of the manuscript (Mattsson, Sundberg, & Laget, 2011) or are at least perceived as such (Bhandari et al., 2014); editors trust them as reviewers (Weiss, 2012) and they are a reliable source of knowledge about the publication and the research projects behind it (Wren, Grissom, & Conway, 2006). After the first pilot in July 2017 and a second pilot in April 2018, the definitive survey took place from July to November 2018. Screening of the base meant that the final sample came to 6,943, in other words 10.3% of the population collective. Listwise deletion was used in handling missing data. Replies came from 57% men and 43% women, with a mean age of 47 years. Most (54%) worked in universities, 19% worked in research bodies, 16% in healthcare establishments and the rest (1%) in other types of organisations.

The Helsinki guidelines on research with humans were taken into account and a favourable report was obtained from the Ethics Committee of the Spanish National Research Council (CSIC) and from the Universidad Politécnica de Valencia.

Measurements

Self-emotional appraisal was measured using the first dimension of Wong & Law's (2002) measurement scale. It consists of four items ranging from 1 to 7 (e.g. "I have a good sense of why I have certain feelings most of the time"). The scale's α reliability was 0.81 and α values above 0.70 were considered acceptable (Peterson, 1994).

Self-deceptive enhancement was measured using Hart et al. (2015), an eight-item measurement scale ranging from 1 to 7 (e.g. "I am not always honest"). The scale's α reliability was 0.89.

Social support was measured using the first dimension of the Johnson et al. (2010) resilience measurement scale, which has been adapted by Tur-Porcar, Cuartero-Monteagudo, Gea-Caballero, & Juárez-Vela, 2020). It is a four-item scale ranging from 1 to 7 (e.g. "If I were to have problems, I have people I could turn to"). The scale's α reliability was 0.84.

Motivation was measured using the measurement scale by Grant (2008). This is an eight-item measurement scale involving two dimensions: prosocial motivation and intrinsic motivation. The scale's α reliability was 0.79.

The control variables were: employee age, gender (coded as 1=male, 0=female), and type of organisation (coded as 1 = public administration; 2 = business school; 3 = private companies; 4 = healthcare organisations; 5 = non-profit organisations; 6 = research institution; 7 = university). Table 1 shows the measurement scales' fit values.

We include these control variables for different reasons. Firstly, scientific participation may be related to individual characteristics such as sex and age, as well as to organisational characteristics (Perkmann et al., 2013). Secondly, a previous study confirmed that the scientists' type of organisation and sex is related to the link between

their personality traits and the perception they have themselves about the impact of their research (Azagra-Caro & Llopis, 2018).

Table 1

Fit values of the psychometric measurement scales (n = 6,943)

	S-B χ2	d. f.	p-value	BBNFI	CFI	RMSEA	NC (=χ2 / d.f.)
Self-emotion appraisal	18.171	6	0.081	0.993	0.984	0.054	3.029
Social support	48.620	6	0.054	0.962	0.975	0.061	2.210
Motivation	38.901	28	0.068	0.961	0.963	0.052	2.288
Self-deceptive enhancement	62.744	15	0.000	0.954	0.956	0.059	2.852

All the loadings for the second-order factors were significant at *p*<0.001.

Results

Analyses

A four-factor confirmatory factor analysis was carried out (self-emotional appraisal, self-deceptive enhancement, social support and motivation), revealing a good fit (RMSEA=0.049; BBNFI=0.937; CFI=0.941). High and significant loadings were also found, which gave a valid measurement model.

Descriptive statistics and correlations are shown in Table 2. The control variable for age had a significant correlation with motivation, and a negative and significant correlation with social support.

Table 2

Means, standard deviations and correlations ($n = 6{,}943$)

	Mean	SD	SEA	SS	MOT	SDE
Sex	1.429	0.495	.009	-.021	.031	.019
Age	48.805	9.942	.009	-.116*	.223**	.027
Self-emotion appraisal	5.029	1.032	1			
Social support	5.952	1.121	.273**	1		
Motivation	5.416	1.21	.249**	.235**	1	
Self-deceptive enhancement	4.524	1.268	.514**	.223**	.181**	1

*p < 0.05; ** p < 0.01.

The results show positive relationships between the psychological variables analysed, i.e. self-emotional appraisal is directly proportional to social support (r = .273**; p < 0.01), to motivation (r = .249**; p < 0.01) and to self-deceptive enhancement (r = .514**; p < 0.01). Social support is positively related to motivation, self-deceptive enhancement and the type of organisation (r = .217**; p < 0.01) and negatively to age. Motivation is also positively related to self-deceptive enhancement (r=.181**; p<0.01) and age (r = .223**; p < 0.01). Hence, motivation can be accompanied by high indices of self-deceptive enhancement. Furthermore, older researchers tend to have higher indices of motivation.

To verify the hypothesis, we performed structural equation modelling using the EQS software. First, Hypothesis 1 was tested, resulting in a satisfactory fit (RMSEA = 0.047; BBNFI: 0.953; CFI = 0.956). The results suggest a direct path between self-emotion appraisal and motivation (β = 0.391; p < 0.05).

Hypothesis 2 was supported. The mediating role of social support was confirmed. The indirect path from self-emotion appraisal to motivation through social support was significant (β = 0.18; p < 0.05), and the explained variance in motivation increased from

15.9 in the direct model to 22.9 in the mediation model, thus revealing a mediating role.

Figure 2 shows the results of the structural equation model, and Table 2 shows the indirect effects on individual performance.

Figure 1

Standardised SEM results
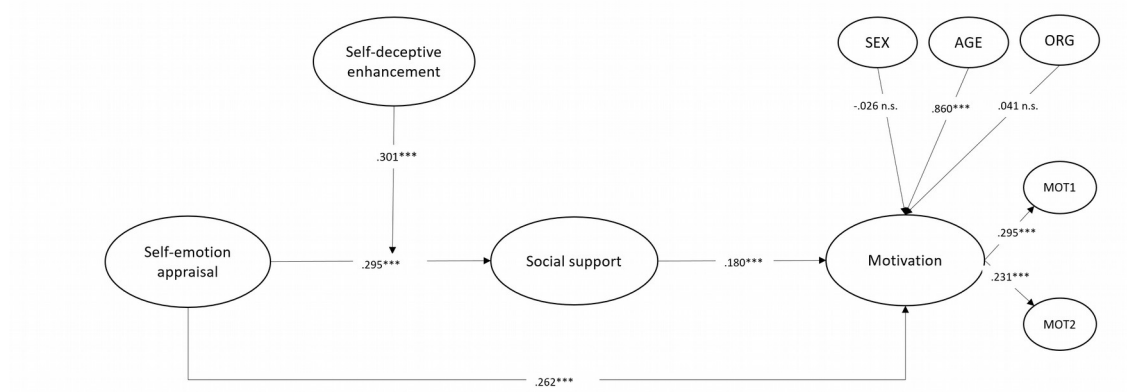
*p< 0.05; **p < 0.01; ***p < 0.001. Only significant results are shown.

Table 3

Results from the structural equation model

Hypothesis	Description of path	Path coefficient (unstandardised β)	Result
Sex		-0.026 n.s.	
Age		0.860	
Organisation		0.041 n.s.	
H1	SEA → MOT	0.262***	H1 (+): Supported
H2	SEA→ SS → MOT	0.18***	H2 (+): Supported
H3	SEA → SDE → SS	0.301***	H3 (+): Supported

*p< 0.05; ***p< 0.001.

Hypothesis 3 was also supported. There was significant interaction effect between self-emotion appraisal and self-deceptive enhancement. When these interaction effects were added, the model increased the explained variance in social support from 11.2 to 15.4, compared to a model containing only the main effects. We plotted this interaction effect in Figure 3. A simple slope analysis checking the relationship between self-emotion appraisal and social support at high and low levels of self-deceptive enhancement behaviour was performed, considering one standard deviation above (green line) and below (red line) the mean (Cohen et al., 2013). The results show that the positive effect of self-emotion appraisal on social support became stronger when individuals exhibited self-deceptive enhancement ($\beta = 0.30$; $p < .01$).

Figure 3

The moderating role of self-deceptive enhancement behaviour (SDE) in the relationship between self-emotion appraisal (SEA) and social support (SS)
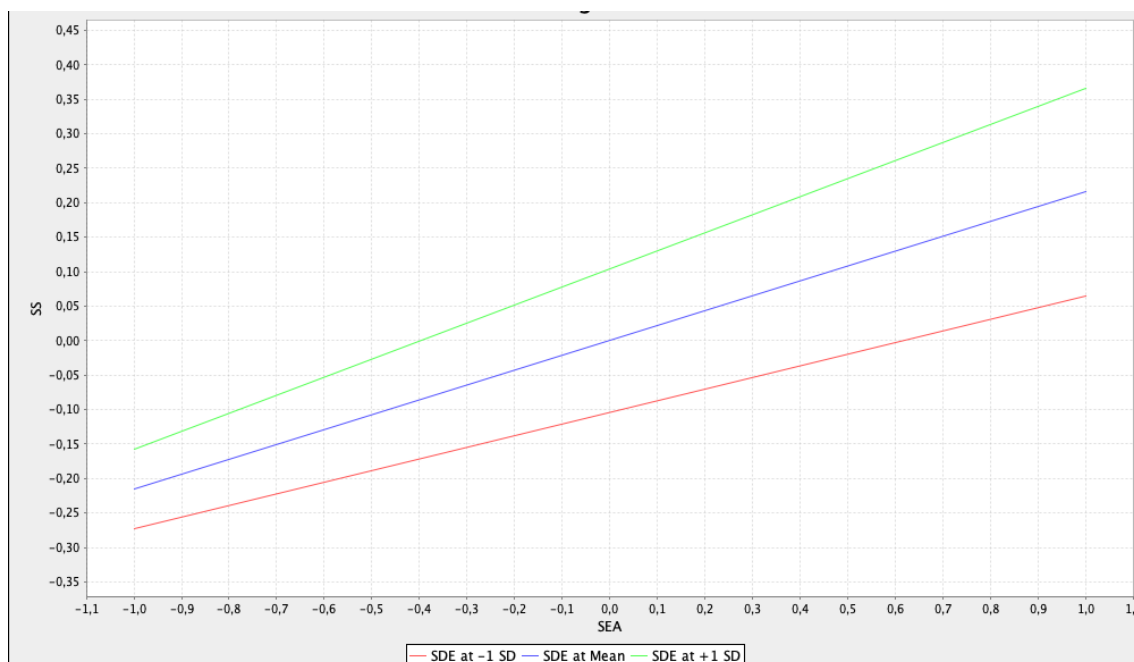
Discussion

This research has analysed the relationships between self-emotional appraisal, social support and motivation (intrinsic and prosocial) and the role played by the mediating and moderating variables of social support and self-deceptive enhancement on the collective of researchers engaged in advanced knowledge.

As regards Hypothesis 1, aimed at analysing the direct relationships between self-emotional appraisal and motivation, it has been verified that they are positive and significant. Scientists with good self-emotional appraisal are more likely to know their strengths and weaknesses and to handle their own emotions. In this situation, thoughts can be more balanced and proactive, more focussed on creative intrapersonal reflections geared towards performance (Mayer et al., 2008; Santos et al., 2018; Zhu et al., 2018), and they may help overcome difficulties in the decision-making process.

Self-emotional appraisal also lays down the foundations for a realistic plan aimed at achieving the goals set out in an interactive process involving emotions and motivations, as well as cognition (O'Shea et al., 2017). All of this occurs because self-emotional appraisal, which implies good knowledge of one's emotions, fosters commitment to the task and individual productivity (Lopes et al., 2006). It contributes to the integration of professional identity (Akerjordet & Severinsson, 2007) and to the implementation of constructive activities in doing one's job (Mayer et al., 2008).

Within advanced knowledge, people with good self-emotional appraisal are more capable of defining realistic objectives in keeping with prior ideas, skills and resources, as well as setting out a plan of action that commits them to the activity and guides them to

achieving it with autonomy and self-determination (Gagné & Deci, 2005; Ryan & Deci, 2000). In this process, the task ends up being stimulating and generates personal and collective well-being (Grant, 2008). In the process of getting involved in the task, the person seeks a balance between their emotional state and their ability to carry out the activity. That balance helps them to feel able to carry out the work with signs of success and to experience a positive emotional state, which is driven by their own self-emotional appraisal (Abid et al., 2018).

Secondly, as regards the mediating role of social support in the relationship between self-emotional appraisal and motivation (Hypothesis 2), the results confirm the hypothesis. Researchers able to relate to others and share work experiences aimed at meeting common aims can use the same social network to obtain motivating channels to boost commitment to doing their job and carrying out a task. Sharing work between researchers also increases the capacity to finish off the task and brings down the costs arising from the demands of the environment (Beckes & Coan, 2011).

Good handling and management of one's own emotions helps maintain interpersonal relationships and share concerns (Bucich & MacCann, 2019), which help motivation because they keep up the energy and the direction of activities towards a common goal. It should not be forgotten that work can be satisfactory for oneself and for others, given that the results benefit both the individual and the group (Portes,1998). A shared effort stimulates the convergence of activities in favour of a common goal, such that it increases motivation (Beckes & Coan, 2011; Feeney & Collins, 2015). In these cases, intrinsic and prosocial motivation support each other internally (Grant, 2008; Kroll & Porumbescu, 2019).

Generally speaking, the results show social support to be a mediating variable that boosts the relationship between self-emotional appraisal and intrinsic, prosocial motivation. For

this reason, they are closer to the results obtained by Kulkarni et al. (2006) within the organisational sphere, and to knowledge management, than the results obtained by Wang et al. (2015). All in all, both studies took into account the role played by leaders and supervisors in the organisational sphere, together with the work of colleagues. In the research by Kulkarni et al. (2006), the two collectives had a positive role in motivation, whereas in the study by Wang et al. (2015), the supervisors and leaders were the ones who had a greater impact on the employees' intrinsic motivation.

Furthermore, our results support the theory given by Zee et al. (2018), according to which social support boosts motivation, especially when the group responds to the needs and interests of all those involved. In advanced research, knowledge networks and research groups aim to disseminate the topics in which they are working. To this end, working in networks broadens the possibilities for publication and is related to the ability to draw up a plan to achieve the goals proposed; in other words, it is related to motivation (Ryan & Deci, 2000). Moreover, this social support, which drives towards a task shared by the group, responds to the needs of all the group's members, which is motivational for everybody (Feeney & Collins, 2015).

What is more, individual behaviour and interpersonal relationships can lead to knowledge networks, with positive repercussions in terms of an improvement in individual and group results (Groves et al., 2008; Jung & Yoon, 2012; Lu & Kuo, 2016; Portes, 1998). Said networks can also positively help integrate professional identity, laying down the lines of activity in convergent research matters (Akerjordet & Severinsson, 2007).

To sum up, good self-awareness lays the foundations to take on responsibilities in keeping with emotional skills (Gagné & Deci, 2005). The balance between skills and responsibilities helps autonomous, self-guided work, increasing intrinsic motivation,

which may also have an altruistic, prosocial aim (Kroll & Porumbescu, 2019). Commitment to the task benefits from social support and knowledge networks, fundamentally when the group members focus their activities on achieving common aims (Feeney & Collins, 2015; Zee et al., 2018). These aims tend to be related to developing and publishing the topic being studied.

Shared effort can also help the researcher's work by reducing the individual workload and increasing the convergence between people (Gross & Proffitt, 2013). In this point, the results will be positive for the scientist individually as well as for the other members of the group or organisation (Portes, 1998). High indices of motivation and social support can also feed each other mutually, above all among people who are driven by common goals. Furthermore, feeling social support can help activities aimed at achieving the proposed goals, which will have an individual and collective repercussion (Portes, 1998). It can also help in the face of adversity (Gross & Proffitt, 2013).

Thirdly, Hypothesis 3 is aimed at analysing the moderating effects of self-deception in the relationship between self-emotion appraisal and social support in the model designed. The results verify this moderation. It seems that an internalisation of feelings closer to what is considered socially acceptable may be a factor that favours social support.

Self-deceptive enhancement (SDE) refers to internalised feelings; beliefs that bring the way of interpreting one's own actions closer to what we consider to be more socially acceptable. Said internalised beliefs foster responses in keeping with what is socially acceptable, without necessarily having the intention of lying, but rather of masking the replies (Elliot et al., 2018; Paulhus, 1991). The tendency to smooth out replies, providing a more positive image, boosts their moderation and increases the possibilities of attaining social support, even though such replies are concealing the most intimate feelings, which the person is not very aware of (Paulhus, 1984). The discrepancy between more intimate

feelings, which one does not wish to show, and feelings in keeping with what is socially expected, is a complex one. The line between one state and another is difficult to solve since in both cases we are dealing with internalised feelings that are taken up unconsciously and which may depend on processes of attention, assimilation and memory of the information itself (Leng et al., 2019; Paulhus, 2002).

Limitations and conclusions

This study has had its limitations. The first concerns obtaining the sample. Documents were sent by e-mail to 65,000 researchers from the public, semi-private and private spheres and different sectors engaged in research in Spain. Out of these, 11% replied. Although this percentage means almost 7,500 participants, it may be supposed that the participants' personal characteristics set them apart from the rest of the scientific population who did not answer the request. Despite this, the participating population is very extensive, diverse in terms of scientific fields (medicine, natural sciences, types of engineering, social sciences, arts and humanities, etc.) and from all over Spain. This means that the results can be generalised in the Spanish environment and easily translatable to other Western cultures. It would be worthwhile extending the analysis to more collectivist cultures such as Eastern cultures.

The second limitation is related to the broad nature of the research and the results of this. Although the analyses were designed based on complex procedures that foster causality, a longitudinal study would enrich the results. Aware of this, we expect to be able to provide information based on an evaluation in two waves.

The third limitation is to do with the fieldwork, and specifically the evaluation. This was based on self-reports filled in by the researchers themselves individually in front of the computer screen. This situation has a twofold interpretation. On the one hand, those

surveyed are not pressured by the presence of an evaluator. On the other, on doing it alone they may give excessively fast replies. Despite this, the psychometric analyses of the study variables have confirmed an acceptable validity and reliability in the tests.

In conclusion, it should be pointed out that in advanced knowledge, self-emotional appraisal strengthens motivation. Scientists with good self-emotional appraisal are motivated to carry out plans leading to the achievement of the goals set. People in science know that results come in the medium- and long-term. In this context, researchers that can count on social and group support have greater possibilities of increasing their motivation. In keeping with the theory from Beckes & Coan (2011), group work helps to share the task among group members and to increase motivation and results, above all when they pursue common goals (Feeney & Collins, 2015; Zee et al., 2018). It may also contribute to the integration of professional identity because the group gradually sets out the lines of activity (Akerjordet & Severinsson, 2007) and can enrich collective convergence by reducing the individual workload (Gross & Proffitt, 2013).

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