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**Personal Initiative, Passive-Avoidant Leadership and Support for Innovation as
Antecedents of Nurses' Idea Generation and Idea Implementation**

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Personal Initiative, Passive-Avoidant Leadership and Support for Innovation as Antecedents of Nurses' Idea Generation and Idea Implementation

ABSTRACT

Purpose: This study aims to explore the role of individual (work engagement, personal initiative), group (transformational, transactional, passive-avoidant leadership) and organisational factors (support for innovation climate) in fostering the two components of nurses' innovative behaviours, idea generation and idea implementation.

Design and Method: A cross-sectional study was conducted in an Italian public hospital, in two departments that had been created by merging other departments. A self-report questionnaire was completed by 118 nurses. Hierarchical regression analysis was used to test the hypotheses.

Findings: Respondents reported a high frequency of idea generation followed by idea implementation. Personal initiative and passive-avoidant leadership were significantly and positively related to nurses' idea generation and idea implementation. Support for innovation was positively related to idea implementation. Transactional and transformational leadership did not show any relationships with the two innovative work behaviours.

Conclusions: This study shows that nurses' innovative work behaviour is a complex and multi determined behaviour, influenced by individual, group, and organisational factors. It also shows that low levels of passive-avoidant leadership may contribute to innovation.

Clinical Relevance: Healthcare policies and strategies are needed to support a leadership style that allows space for autonomy, and that, together with support for innovation and personal initiative, facilitates nurses' idea generation and idea implementation.

Keywords: innovation, personal initiative, work engagement, leadership style, support for innovation.

Healthcare organisations are increasingly promoting the introduction of innovations to provide the best service at the same or lower costs (Carlucci, Mura, & Schiuma, 2019).

Developing and implementing innovative ideas in healthcare organisations does not depend only on top management but also on front-line staff, and nurses can also be active protagonists of the required transformations (Thakur, Hsu, & Fontenot, 2012).

Innovation taking place in healthcare settings may involve small, incremental changes, such as tools to better monitor patients' health or administrative procedures to improve the functioning of healthcare units (Kessel, Hannemann-Weber, & Kratzer, 2012; McSherry & Douglas, 2011). Innovation in nursing practices is also important because it may positively affect multiple aspects of organisational life, such as nurses' working conditions (Åmo, 2006) and job productivity (Chang & Liu, 2008), or hospital cost reduction (Tsuru et al., 2019).

Innovation is defined as “the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things... innovation refers to the ... stage of implementing ideas towards better procedures, practices or products” (Anderson, Potočnik, & Zhou, 2014, p. 1298). Despite scholars consider the innovation process as composed of two stages (the generation of new and useful ideas, called creativity, and the implementation of new ideas, called innovation) (Amabile & Pratt, 2016), three stages (Holman, et al., 2012) or four stages (De Jong & Den Hartog, 2010), most empirical studies, with some noteworthy exceptions (Bagheri & Akbari, 2018), combined the creativity and innovation stages into a single composite measure of innovation (Anderson et al., 2014). In addition, predictors of innovation in nursing have been understudied (Kessel, Hannemann-Weber, & Kratzer, 2012), and because of the differences in healthcare systems there is the need to examine nurses' innovation in other cultures beyond the United States (Kessel et al., 2012; Xerri, 2013). This study, adopting the two-stage model of idea generation and idea implementation, investigates the joint effect that individual, group and organisational factors have on each single stage of the innovation process in a sample

of Italian nurses. The aims are to extend innovation literature to the nursing context and provide nursing managers with specific knowledge about the factors that encourage nurses to generate and introduce new and useful ideas.

Engagement and personal initiative as antecedents of innovation behaviours

Literature shows that work engagement and personal initiative have a relevant impact on innovation behaviours. Work engagement, defined as a positive, fulfilling state of mind characterized by vigour, dedication, and absorption (Schaufeli, Bakker, & Salanova, 2006), plays a role in the development of innovative behaviours at work (Kwon & Kim, 2020). For example, Slåtten and Mehmetoglu (2011) and Kim and Koo (2017) observed a relationship between work engagement and innovative behaviour in frontline employees in the hospitality industries of Norway and South Korea. In a healthcare context, Gomes, Curral and Caetano (2015) found that work engagement positively affected individual innovation, acting as a mediator between self-leadership and innovative behaviours. It has been argued that engaged employees use cognitive energies to reconsider the existing procedures and find new ideas to solve problems, and also that they employ their emotional and physical energies to sustain the experimentation, correction, and refinement required by the implementation of new ideas (Kwon & Kim, 2020).

Personal initiative is another individual characteristic that fosters innovation in organisations. It is defined as the tendency to overcome rules and barriers in order to carry out a task or goal (Frese, Fay, Hilburger, Leng, & Tag, 1997). Individuals with high levels of personal initiative would start and persist in exploring the environment, reflecting, and talking with colleagues to detect problems, figure out and try to implement solutions to solve them. In previous studies, personal initiative was related to work-unit innovativeness in a sample of Finnish dentists (Hakanen, Perhoniemi, & Toppinen-Tanner, 2008). In another study with 52 nurses, personal initiative was related to the level of creativity embedded in the proposed ideas

(Binnewies, Ohly, & Sonnentag, 2007). Another study conducted with teachers showed that personal initiative was related to idea implementation but not to idea generation (Binnewies & Gromer, 2012).

Leadership and support for innovation as predictors of innovation behaviours

The contribution of individual characteristics to innovation is only part of the story. Innovation is, in fact, also a social process because it happens in a context where individuals work with other colleagues and are typically coordinated, or led, by higher ranked staff, be it a head nurse, a chief medical officer, or the general director.

Leadership has an important impact on many outcomes of a nursing workforce (Cummings et al., 2018). Over the years, particular relevance has been given to transformational and transactional leadership theory (McGuire & Kennerly, 2006). According to this theory, transformational leaders make followers aware of the importance of task outcomes, activate their higher-order needs, and encourage them to go beyond their own interest in order to pursue organisational goals. Transactional leaders, instead, establish an exchange process in which they reward (or punish) followers for their job efforts (Judge & Piccolo, 2004). The theory also includes a third form of leadership, or non-leadership, called laissez-faire leadership, where leaders tend to avoid making decisions, are reluctant to initiate actions, and are absent when needed (Judge & Piccolo, 2004). Studies show that laissez-faire leadership is positively related to a component of transactional leadership, namely passive management by exceptions, which describes situations in which leaders intervene only when problems appear. Passive management by exception and laissez-faire are considered as two ineffective leadership behaviours (Judge & Piccolo, 2004) and in many studies they are considered as a single construct, named passive-avoidant leadership (Abdelhafiz, Alloubani, & Almatari, 2016; Avolio, Bass & Jung, 1999; Malloy, & Penprase, 2010).

Some studies show that transformational leadership, by encouraging new visions and challenges, promotes nurses' innovative behaviour both directly (Jaiswal & Dhar, 2015) and indirectly (Weng, Huang, Chen, & Chang, 2015; Masood & Afsar, 2017). Under a transactional leader, employees who are rewarded for their good performance tend to avoid developing or trying to implement new ideas because failures would be punished (Kark, van Dijk, & Vashdi, 2018). Finally, passive-avoidant leadership, much less studied than the other two forms of leadership, is negatively related to many aspects of work, as job satisfaction (Abdelhafiz et al., 2016) or psychosocial work components, as commitment and organisational values, and positively related to stress or work-family conflict (Malloy & Penprase, 2010).

Also organisational components, such as organisational climate for innovation, play an important role in creativity and innovation (Anderson et al., 2014). Organizational climate for innovation is a relatively enduring characteristic of work settings. It is a multifaceted construct composed of four dimensions, one of which is support for innovation. Support for innovation is defined as the "expectations, the approval and the practical support of attempts to introduce new and improved ways of doing things" (Anderson & West, 1998, p. 240), and it refers to organizational cooperation and support when developing and implementing new ideas. It is one of the main climate dimensions promoting innovation (Eisenbeiss, van Knippenberg, & Boerner, 2008), although contradictory results have been observed. On the one hand, the relationship between support for innovation and innovative behaviours was confirmed in the meta-analysis by Hülshager, Anderson and Salgado (2009); on the other hand, support for innovation was not related to organisational innovation neither mediating (Gumusluoglu and Ilsev, 2009a) nor moderating (Gumusluoglu & Ilsev, 2009b) the relationship between transformational leadership and organisational innovation.

Based on the literature review, this study aims to investigate whether individual, group, and organisational factors are associated with nurses' idea generation and idea implementation, with

only one of the two, or with neither of them. Therefore, we tested whether (a) work engagement, (b) personal initiative, (c) transformational leadership, and (d) support for innovation are positively related to idea generation and idea implementation; and whether (e) transactional leadership and (f) passive-avoidant leadership are negatively related to idea generation and idea implementation.

Method

Research design and participants

This study is a cross-sectional research conducted in two departments of a public hospital in central Italy that resulted from the merge of different departments. A self-administered paper and pencil questionnaire was submitted to nurses from the two departments, and 118 returned it. Three participants were dropped because their questionnaires were filled in an unreliable way (missing/same answers to all questions); thus we considered the answers of 115 nurses.

Ethical considerations

The study was proposed to the general director of the hospital; he discussed the proposal with his staff and then approved it. Data collection and data analyses were carried out following the Helsinki Declaration (and subsequent revisions) and the Italian regulations on data protection and privacy (Law number 196/2003). The questionnaire contained an informative preliminary section describing study aims, data processing procedures, and privacy rights. Respondents were informed of the study by their supervisors and took part in it on a voluntary and anonymous basis.

Data collection procedure

Printed questionnaires were distributed in the wards and nurses had two weeks of time to fill it. Once filled, nurses inserted the questionnaire in a closed box located in each ward, which was collected by a member of the research team at the end of the two weeks' period.

Measures

Work engagement was measured using a four items reduced version (0 = “never, 6 = “ever”) of the Utrecht Work Engagement Scale (UWES) developed by Schaufeli, Bakker and Salanova (2006). An example of an item is “I am enthusiastic about my job”. Cronbach’s alpha of this scale was .95.

Personal initiative was measured using the scale developed by Frese et al. (1997). A four items reduced version was used; an example of item is “I take initiative immediately even when others don’t”. Cronbach’s alpha of personal initiative scale was .90.

Leadership styles were assessed using a shortened version of the Multifactor Leadership Questionnaire (MLQ) by Bass and Avolio (2000). We used the rater form, in which nurses reported their perceptions of the characteristics of their leaders. Transformational leadership was evaluated using six items. An example of an item is “My supervisor solicits different points of view when solving a problem”. Transactional leadership was assessed using four items. An example of an item is “Provides assistance in exchange for employee engagement”. Passive-avoidant leadership was assessed using six items. One example of an item is “Waits for things to go wrong before taking action”. Cronbach’s alpha were .82, .63 and .88, respectively for transformational, transactional and passive-avoidant leadership scales.

Support for innovation was assessed using a reduced four items version (0 = “completely disagree”, 6 = “completely agree”) of the Team Climate Inventory (TCI) developed by Anderson and West (1998). An item of the scale is “In this department we take the time needed to develop new ideas”. Cronbach’s alpha of this scale was .95.

Innovative behaviour was measured using six items (0 = “never”, 6 = “always”) of the measure developed by Holman et al. (2012) and validated in the Italian context (Donati, Zappalà & González-Romà, 2016). Each employee answered three items measuring how often he/she suggested new methods and work procedures (idea generation) and three items measuring how often his/her ideas had been implemented in the organization (idea implementation). Examples of items, one for each subscale scale, are: “How often, in your work, do you... Generate original ideas; ...Have your suggestions for improvements adopted”. Cronbach’s alpha was .91 for both idea generation and idea implementation.

Data analysis

Cronbach alphas and Confirmatory Factor Analyses (CFAs) were conducted to assess the reliability of the scales and the structural validity of the measurement model. Descriptive analyses, correlations, and ANOVA were performed. Two hierarchical regressions were then computed, using idea generation and idea implementation as dependent variables. Independent variables were entered in three blocks: the first block included variables at the individual level, personal initiative and work engagement; the second one included transformational, transactional, and laissez-faire leadership variables; finally, support for innovation was added in the third block. All the analyses were carried out using SPSS 25.0 and Mplus 8 for Windows.

Results

Descriptive analyses of socio-demographic variables show a prevalence of women in the sample (65.2%). The average age of the employees was of 33.32 years (S.D. = 8.03; min = 22; max = 58) with an average seniority of 7.08 years (S.D. = 7.02; min = .04; max = 35). Almost all the nurses (n= 104) had a permanent contract, and the remaining 11 had a fixed-term contract.

Twelve nurses with the permanent contract were working part-time, whereas the rest were working full-time (see Table 1 for demographics).

----- Insert here Table 1 -----

We ran CFAs to compare a model with all the items loading into a single factor (Model 1: $\chi^2 = 2292.41$, $df = 527$; RMSEA = .17; CFI = .39; TLI = .35), with a model in which each item saturated in the expected factor (Model 2: $\chi^2 = 764.05$, $df = 467$; RMSEA = .07; CFI = .90; TLI = .89). This second model demonstrated a better fit than the first one, which improved even more when three pairs of errors, two by two saturating in the same factors, were allowed to covariate (Model 3: $\chi^2 = 761.27$, $df = 496$; RMSEA = .07; CFI = .91; TLI = .90).

Cronbach's alpha values, reported in Table 2, indicate scores higher than .80, with the only exception of transactional leadership reporting an alpha of .63. Transformational and passive-avoidant leadership reported, respectively, alphas of .82 and .88. The other scales reported values equal or higher than .90. In the whole, most of the scales that we used show a good reliability.

Averages scores are higher than the mid-point of the response scales, except for passive-avoidant leadership ($M = 1.55$; $SD = 0.89$) which suggests lower level of such leadership behaviours in comparison to leaders' transformational ($M = 2.93$) and transactional ($M = 2.79$) behaviours. Respondents reported a higher frequency of idea generation ($M = 3.93$; $SD = 1.01$) than idea implementation ($M = 3.15$; $SD = 1.43$). No significant differences were observed between the two departments on any variable. Correlations were positive and significant between all the variables, with the exception of transformational leadership which was not related to idea generation, and passive-avoidant leadership which was not related to personal initiative, transactional leadership and support for innovation. All means, standard deviations, and correlations are shown in Table 2.

----- Insert here Table 2 -----

To test our hypotheses, two hierarchical regression analyses were performed. Before running these analyses, correlations between possible socio-demographic variables (age, gender, type of contract, tenure) and idea generation and idea implementation were computed. No socio-demographic variable was related to the two dependent variables, and for this reason, we did not control for these variables in the regression analyses.

The first hierarchical regression analysis (reported in Table 3), with idea generation as dependent variable, showed, in block 1, that personal initiative ($\beta = .45, p < .01$) and work engagement ($\beta = .22, p < .05$) accounted for 35% of the variance in idea generation ($F(2, 108) = 28.54, p < .001$). The inclusion of leadership variables in block 2 significantly affected the R^2 of the model ($\Delta R^2 = .06, \Delta F(3, 105) = 3.60, p < .05$), with a significant value only for the passive-avoidant style ($\beta = .23, p < .05$). The inclusion of support for innovation in block 3 did not significantly affect the R^2 of the model ($\Delta R^2 = -.00, \Delta F(1, 104) = .40, n.s.$).

----- Insert here Table 3 -----

The second hierarchical regression (reported in Table 4), with idea implementation as dependent variable, showed significant changes in R^2 for each block. The first block accounted for 40% of the variance in idea implementation ($F(2, 108) = 36.22, p < .01$). The inclusion of leadership variables in block 2 significantly affected the R^2 , accounting for 53% of the variance in the dependent variable ($\Delta R^2 = .13, \Delta F(3, 105) = 9.73, p < .01$). Also in this case, only passive-avoidant leadership showed a significant value ($\beta = .38, p < .05$). The inclusion of support for innovation ($\beta = .21, p < .05$) in block 3 increased the explained variance to 56% ($\Delta R^2 = .03, \Delta F(1, 104) = 6.11, p < .05$).

----- Insert here Table 4 -----

Discussion

This study examined the contribution of individual (work engagement, personal initiative), group (transformational, transactional, and passive-avoidant leadership) and organisational

(support for innovation) variables in the prediction of idea generation and idea implementation in nurses working in a hospital in the centre of Italy. Descriptive analyses show that, on the whole, nurses had moderate to high levels of work engagement and personal initiative, and perceived transformational and transactional leadership as often present, whereas passive-avoidant leadership was rarely experienced.

The regression analyses did not confirm hypothesis (a), but they confirmed hypothesis (b). In other words, work engagement was no longer related to idea generation and idea implementation when leadership and support for innovation were introduced in the hierarchical regressions. By contrast, as expected, personal initiative confirmed the positive relationship with both idea generation and idea implementation, even when all the other variables were included in the regression.

Regarding the leadership hypotheses, hypotheses (c) and (e) were not confirmed: transformational and transactional leaderships did not show any relationship with idea generation and idea implementation. Similarly, hypothesis (f) was not confirmed, although, interestingly, and contrary to our expectations, in the current context passive-avoidant leadership showed a significant and positive, rather than negative, relationship with both idea generation and idea implementation. Finally, hypothesis (d) was partially confirmed because support for innovation was related to idea implementation, but not to idea generation.

These results contribute to the scientific literature along multiple lines. First, they confirm the role of personal initiative in fostering the innovative behaviours of idea generation and idea implementation in nursing contexts, where the distinction between idea generation and idea implementation has rarely been studied. The study suggests that innovation is not an easy process, and it requires being proactive, self-starting, and persistent not only to develop but also to implement ideas that may anticipate or solve problems, or improve performance. This result is consistent with previous studies showing the impact of personal initiative on innovation

components in Finnish dentists (Hakanen et al., 2008) and teachers (Binnewies & Gromer, 2012). Second, despite the high correlations between work engagement and idea generation and idea implementation, the absence of relations when group and organisational variables were introduced in the regression was unexpected. This lack of a relationship should be further investigated to determine whether it is due to a real predominance of the group and organisational factors over engagement, or whether it should be attributed to the measurement we used, the specific sample, or the context of this study.

Third, in this study, passive-avoidant leadership, rather than transformational and transactional leadership, was positively related to nurses' idea generation and idea implementation. Although nurses perceived transformational and transactional behaviours as the most frequent ones, these leadership behaviours had no impact on the two innovation stages. For transactional leadership, this could be attributed to the low reliability of the measurement, but this explanation is not valid for transformational leadership that had higher reliability. In this study, innovation was not driven by the vision and intellectual stimulation proposed by a transformational approach, nor by the exchange proposed by a transactional approach. Instead, we observed that the limited or non-intervention approach of passive-avoidant leadership was related to the perception of the generation and implementation of new ideas. Although previous research suggests that passive management by exception and laissez-faire are typically related to negative outcomes (Malloy & Penprase, 2010), the positive aspects of passive-avoidant leaders have been highlighted by suggesting that subordinates appreciate being left alone to manage their tasks (Yang, 2015), especially when they are competent and well educated (Lee et al., 2020). Two considerations may explain this result. First, the highly regulated healthcare context is often characterized by the presence of compulsory continuing professional education (Koff, 2017), which contributes to the maintenance of high levels of nurses' competence and responsibility. With such qualified staff, a passive-avoidant approach would not be a sign of negligence but a

sign of respect from the leader who, making a non-intervention decision, promotes the autonomy and initiative of followers which, in turn, encourage innovation (De Spiegelaere, Van Gyes, De Witte, Niesen, & Van Hootegem, 2014; Yang, 2015) through the search for solutions for clinical, social, or organisational problems. It is, however, important to note that, in our study, innovative behaviours were stimulated by small doses of passive-avoidant leadership (as our sample perceived leaders' passive-avoidant behaviours as rarely present). Future studies should further investigate the quantity and quality of innovations introduced by nurses in relation to the perceived level of leadership.

The second consideration, and the other potential explanation for the positive relationship between passive-avoidant leadership and the two innovation stages, is also related to the low level of passive-avoidant leadership. Our result might be attributed to a non-linear relationship between these two variables: it is possible that the relationship is positive when low levels of passive-avoidant leadership suggest autonomy and respect by the leader, but it becomes null, or negative, when intermediate or high levels of this type of leadership suggest leader's negligence or indifference towards his/her followers. Similar effects have been observed for empowering leadership and employees' performance (Wong Humborstad, Nerstad, & Dysvik, 2014), and future research should verify our suggestion.

Finally, the fourth contribution of this study is related to the different relationships that support for innovation has with the two different phases of innovation. In line with Amabile and Pratt (2016), this study confirms that whereas idea generation turns out to be an individual task focused on cognitive reflection, intuition, and persistence, idea implementation is a social activity conducted with the support of colleagues, supervisors, and organisational resources and approval. Perceiving that one's organisation or unit supports innovation is relevant in the implementation of new ideas because changing the way things are done within the hospital inevitably requires approval and practical support from the people involved.

Implications for nursing innovation

Although some of the results of this study have to be confirmed by future research, possibilities to stimulate nurses' personal initiative, as well as the creation of an organisational climate that considers nurses capable of contributing to organisational innovation, are conditions that encourage nurses to develop and implement new ideas that may improve their practice. Identifying situations and cases where nurses' innovation is welcomed and supported, and providing training courses on creativity and type of innovations may create the conditions to involve nurses in these kinds of behaviours. Furthermore, promoting procedures in which ideas are continuously generated, screened, rejected or, if approved, tested and, if successful, widely implemented, is a way to demonstrate that innovation is supported. Finally, compatible with the level of competence, responsibility, and engagement of nurses, our results suggest that passive-avoidant leadership creates conditions that give nurses the opportunity to generate and experiment with new ideas.

Limitations

This study has some limitations. Among them, the study has a cross-sectional research design, and so reverse relationships between variables are possible. Second, the size of the sample is not very large, and future studies should increase the sample size; third, the study is based on self-reported questionnaires, and future studies should consider objective data on innovation, such as the number and types of innovations introduced by nurses or the independent assessment by head nurses. Fourth, transactional leadership showed lower level of reliability, thus the absence of relations with idea generation and idea implementation observed in this study should be better investigated in future studies. Fifth, perception of leadership was only related to the nurses' supervisors, and future research should include other roles to better distinguish the contribution to innovation by different leaders, such as head-nurses, heads of the medical

departments, or hospital management; finally, we did not consider the hospital's contextual variables (hospital size, financial resources, turnover, and similar), which, if included, would increase the external validity of our results.

Conclusion

This study investigated the role that some individual, group, and organisational factors play in fostering innovative behaviours among nurses working in a hospital context. This research clarifies the role of personal initiative and support for innovation in the promotion of idea generation and idea implementation in a healthcare context, and it also opens up a new perspective on the role passive-avoidant leadership may have in promoting nurses' innovative behaviours. This role should be further investigated, particularly in the peculiar work environment of the health sector, considered here.

Clinical Resources

- 1) Ted talk- Rebecca Love - How nurses can help drive healthcare innovation – www.ted.com/talks
full link: https://www.ted.com/talks/rebecca_love_how_nurses_can_help_drive_healthcare_innovation
- 2) Royal College of Nursing - Innovation in nursing - <https://www.rcn.org.uk/professional-development/research-and-innovation/innovation-in-nursing>
- 3) American Nurses Association - Innovation in Nursing and Healthcare - <https://www.nursingworld.org/practice-policy/innovation-in-nursing/>

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Table 1. Demographic characteristics of participants (N = 115)

Variable	Frequency	Percentage
Gender		
Male	40	34.8
Female	75	65.2
Age (years)		
<30	51	44.3
31-45	56	48.7
>46	8	7.0
Organizational tenure		
≤5	61	53.0
6-10	27	23.5
11-15	12	9.7
≥16	15	13.8
Contract Type		
Open-ended, full time	92	80.0
Open-ended, part-time	12	10.4
Fixed-contract	11	9.6

Table 2. Means, standard deviations and correlations between variables (Cronbach's alphas in brackets)

Variables	M	SD	1	2	3	4	5	6	7	8
1. Engagement	4.25	1.42	(.95)	0.49**	0.34**	0.29**	0.23*	0.43**	0.46**	0.54**
2. Personal Initiative	4.51	0.96		(.90)	0.20**	0.24*	0.05	0.38**	0.57**	0.57**
3. Transformational L.	2.93	0.53			(.82)	0.63**	-0.21*	0.49**	0.14	0.22*
4. Transactional L.	2.79	0.58				(.63)	-0.07	0.39**	0.26**	0.29**
5. Passive-Avoidant L.	1.55	0.89					(.88)	0.16	0.26**	0.40**
6. Support for innovation	3.67	1.25						(.95)	0.33**	0.49**
7. Idea generation	3.93	1.01							(.91)	0.66**
8. Idea implementation	3.15	1.43								(.91)

*p < 0.05, **p < 0.01

Table 3. Summary of hierarchical regression for variables predicting idea generation (N = 115)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β
Engagement	0.1 6	0.0 6	0.22*	0.0 8	0.1 6	0.11	0.0 7	0.0 7	0.11
Personal Initiative	0.4 6	0.0 9	0.45**	0.4 8	0.0 9	0.46* *	0.4 7	0.0 9	0.45* *
Transformational L.				- 0.08	0.1 9	-0.04	- 0.1 2	0.2 0	-0.06
Transactional L.				0.2 9	0.1 7	0.17	0.2 8	0.1 7	0.16
Passive-Avoidant L.				0.2 6	0.0 9	0.23* *	0.2 4	0.0 9	0.22* *
Support for innovation							0.0 5	0.0 8	0.06
R ²			0.35			0.41			0.41
Adjusted R ²			0.33			0.38			0.37
F			28.54* *			14.4* *			12.0* *
F change			28.54* *			3.60* *			0.40

*p < 0.05, **p < 0.01

Table 4. Summary of hierarchical regression for variables predicting idea implementation (N = 115)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	β
Engagement	0.34	0.08	0.34**	0.17	0.08	0.17*	0.14	0.08	0.14
Personal Initiative	0.39	0.12	0.39**	0.41	0.11	0.41**	0.36	0.11	0.36**
Transformational L.				0.25	0.25	0.09	0.01	0.25	0.01
Transactional L.				0.20	0.20	0.12	0.10	0.20	0.10
Passive-Avoidant L.				0.38	0.10	0.38**	0.33	0.10	0.33**
Support for innovation							0.21	0.09	0.21*
R ²			0.40			0.53			0.56
Adjusted R ²			0.39			0.51			0.53
F			36,22*			23,84*			21,85*
F change			*			*			*
			36.22*			9.73**			6.11*
			*						

*p < 0.05, **p < 0.01