



Marie Curie vs. Serena Williams: ambition leads to extremism through obsessive (but not harmonious) passion

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Abstract

Extremism occurs when a certain need, for instance, significance quest, overrides other human motivations. Based on the Significance Quest Theory, we argue that ambition—a specific aspect of significance quest—can lead to extremism, particularly through obsessive passion. In an Italian sample (Study 1, $N = 249$) we predicted and found that ambition was positively related to both obsessive and harmonious passion; however, only obsessive passion positively predicted extremism. To bolster and generalize our findings we conducted a second study involving American participants (Study 2, $N = 300$). We confirmed the mediating role of obsessive passion in the relationship between ambition and extremism, while we did not find the mediating role of harmonious passion. The present research has theoretical implications in that it constitutes the first evidence that ambition might share some aspects with significance quest and sheds new light on ambition field. Moreover, our findings provide practical ways to prevent extremism.

Keywords Ambition · Obsessive passion · Harmonious passion · Extremism

*“People just don’t understand how
obsessed I am with winning.”
– Kobe Bryant*

Kruglanski et al. (2021) defined extreme states or events as “infrequent phenomena whose rarity results from a pronounced intensity or magnitude of their underlying motivation” (p. 5). In human social behavior, a motivation that often acquires such pronounced intensity is the quest for significance, the universal human need to feel as though one matters and is valued and respected by those in their group, community, or culture whom they respect (Kruglanski & Orehek, 2011). While all people desire significance at least somewhat, sometimes, those who engage in extremism

garner considerable social significance which comes in the forms of fame, respect, and notoriety (Kruglanski et al., 2014). Those who are recognized as the “greatest of all time” attain this title often through extreme commitment to that which will bring them significance. Alexander the Great, for instance, was inspired to dominate people all over the world in an effort to be considered akin to the Greek gods (Giles, 2000). His insatiable desire for significance is clear.

What is the common denominator among those in diverse fields who are widely considered great, from Alexander the Great to Kobe Bryant? Those who achieve social significance have many skills, talents, and characteristics, but they are all bolstered by an underlying trait. They are ambitious. In fact, ambitious individuals seem competitive, achievement oriented, and motivated to acquire wealth and status (Hansson et al., 1983). Ambition has been defined as a personality characteristic, a middle-level trait, and as an aspect of extraversion, but it can nevertheless be summarized as a goal to gain respect and recognition from others (DeYoung et al., 2007; Jones et al., 2017; Judge & Kammeyer-Mueller, 2012). People who are considered to be the best in their fields may be more ambitious than most, for they often engage in extremism in order to achieve the significance for which they yearn so heavily.

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We may conceive, therefore, of those who quest for social significance as ambitious people; those whose need for such social significance overrides all other needs will engage in extremism in order to attain their goal. Although extremism tends to be equated with violent extremism, not all extreme behaviors are antisocial. Extremism may involve committing oneself to practicing a sport for hours every day in the hopes of winning gold medals. They may also involve sacrificing oneself for the sake of one's religion or conquering countries all over the world for the sake of being recognized as a legendary figure.

There are plenty of ambitious people who are not extreme, however. We propose that ambition leads to extremism through passion. In fact, St-Louis et al. (2016) define passion as “a strong inclination toward a self-defining cause that is loved and valued, and in which people invest a significant amount of time and energy” (p. 263). According to Judge and Kammeyer-Mueller (2012), persistence and goal attainment are characteristics of ambitious individuals. In fact, ambition involves strong commitment to one's own goals and determination to reach them, which means that people will actively implement a series of action to gain those ends (Pettigrove, 2007). It therefore seems logical that ambition is related to passion, which concerns the way one pursues goals to which they are highly committed. However, there are different types of passion.

The dualistic model of passion

Vallerand et al. (2003) identified two distinct kinds of passion: harmonious passion and obsessive passion, which differ in the way the passionate activity is integrated in one's life. Specifically, *obsessive* passion refers to that which consumes one's complete attention and energy, overwhelming other spheres of life. This label might easily be applied to Madame Curie, one of the greatest scientists of all time, who lived “in a world quite removed from human beings” (Goldsmith, 2005, pp. 59–60). In contrast, *harmonious* passion refers to that which is important, but not singularly important such that it cannot exist simultaneously with other parts of one's identity (Vallerand et al., 2003). Thus, this is the case in which one perceives the activity as an important aspect of the self, living in harmony with other life domains (Vallerand, 2010). In fact, harmoniously passionate individuals have control over the beloved activity, and they freely decide when to undertake it (Bélanger et al., 2013). Serena Williams, as a fashion designer and mother in addition to a tennis player, is perhaps a better example of harmonious passion. Importantly, as is exemplified by Serena Williams, great success is not limited to those who engage in extremism in order to pursue their goals. In fact, studies have found that harmonious passion is more consistently

linked to performance success than obsessive passion, perhaps because such performance success as a result of the deliberate practice predicted by obsessive passion is curtailed by the accompanying stress, which is not associated with harmonious passion (Vallerand et al., 2008).

Obsessive passion

Obsessive passion, unlike harmonious passion, is associated with goal conflicts, thereby leading to suppression of alternative goals that are unrelated to the object of one's obsessive passion (Bélanger et al., 2013). In this way, obsessive passion is related to the motivational imbalance theory of extremism, wherein the need for significance overrides alternative needs, including those related to self-preservation (Kruglanski et al., 2021). Obsessive passion can be related to the need for significance. Lafrenière et al. (2011) found that individuals who are low on implicit self-esteem, and hence, have low significance and tend toward defensiveness, experience higher levels of obsessive passion.

The significance quest theory holds that “In case a given behavior failed to result in gratifying the need for significance, other equifinal behaviors will be undertaken for that purpose” (Kruglanski et al., 2022). Similarly, obsessive passion may also have a counter final facet, presenting as a compensatory strategy in reaction to unsatisfied needs in realms outside the source of passion (Lalande et al., 2017). In this view, obsessively passionate people may not necessarily ignore all other aspects of their life *in favor* of the object of their passion, but rather may obsessively pursue that object of their passion because they have not been able to attain significance in other areas of life in ways that are consistent with their culture's norms and values. Obsessive passion may therefore be a result of lost significance, which can also be an antecedent for extremism.

Ambition, the quest for significance, and obsessive passion

As the foregoing section suggests, lost significance can situationally activate obsessive passion. Of course, loss (or threatened loss) of significance is one of two key activating factors for the significance quest, alongside the opportunity for significance gain. Recall from the opening section of this article that ambition, too, is closely related to the quest for significance. If ambition is a type of significance quest aimed at becoming respected for one's greatness and success, it stands to reason that ambition may also be predictive of obsessive passion. As previously noted, however, there is no reason to believe that ambition would not also be predictive of harmonious passion. What, then, is the difference

between Marie Curie, who suffered bouts of depression and eventually died of aplastic anemia from radiation exposure due to the amount of time she spent in her lab, and Serena Williams, who has appeared to achieve great social significance without sacrificing her family and other interests? Both were/are ambitious; both were/are passionate about what they did/do. The former exhibited extremism; the latter does not. Perhaps extremism, therefore, depends not only on ambition to achieve greatness (i.e., significance), but also on an obsessive passion for the area in which the person desires to achieve greatness.

The present research

Based on the literature reviewed above, in the present research we will test the hypothesis that ambition can lead to extremism—whether prosocial or antisocial—through obsessive passion but not through harmonious passion. We propose that ambition, as a specific type of significance quest, can lead to extremism, just as the quest for significance can result in extremism. Moreover, we posit that the relationship between ambition and extremism is mediated by obsessive passion. We hold that ambition can result in individuals pursuing their goals in harmonious and obsessive ways, but that only obsessive passion predicts extremism.

We carried out two studies to investigate the mediating role of the two different types of passion between ambition and extremism. In Study 1, we used an Italian sample to test the hypothesis that ambitious individuals are prone to extremism through obsessive, but not harmonious, passion. In Study 2, we tested the same mediation model in an American sample.

Study 1

Method

Procedures, design and participants

The study was approved by the Ethics Committee of Department of Developmental and Social Psychology at Sapienza University of Rome (protocol 808). We decided to recruit 249 Italian adults (55.4 percent male) aged 18 to 50 years old ($M = 27.19$, $SD = 7.34$) to take part in a correlational study. We included only participants aged between 18 and 50 years old because we decided to focus on the adult population. However, we wanted to avoid high variability in relation to age. Thus, we recruited participants only up to 50 years old. In the sample, 49 percent participants had a higher education, 42.2 percent had a bachelor's degree, and 5.6 percent had a PhD degree. Participants were recruited

online through a paid procedure provided by Prolific. After giving their informed consent, each participant filled out an online questionnaire through Qualtrics aimed at assessing ambition, passion, and extremism.

Measures

Ambition

Individuals' ambition was assessed through the Ambition Scale (Resta & Pierro, 2021). Participants were asked to indicate their agreement with statements regarding personal goals and several characteristics of ambitious individuals like aiming at success or recognition and respect from others (10 items, e.g., “*One of my goals is doing something that leaves a mark*”). Items were rated on a 5-point Likert scale (1 = “*Definitely disagree*”; 5 = “*Definitely agree*”) and were averaged to form a single ambition score (Cronbach's $\alpha = 0.89$). Moreover, results from the CFA showed satisfactory fit to the data [$\chi^2(35) = 163.88$, $p < 0.001$, CFI = 0.94, RMSEA = 0.12, SRMR = 0.06], with all factor loadings over 0.41. Even if RMSEA exceeded the recommended cutoff of 0.08 (Schermelleh-Engel et al., 2003), we reached an acceptable fit in the other two indexes. According to the two-index strategy for model fit assessment (Hu & Bentler, 1998), to determine model fit we need SRMR along with another index (TLI, BL89, RNI, CFI, Gamma, Mc, or RMSEA). Thus, considering parameters of CFI (> 0.90) and SRMR (< 0.10), we gained satisfactory fit to the data. The items of the Italian version of the Ambition Scale can be found in Appendix A.

Passion

Harmonious and obsessive passion were assessed using the Italian version of the Passion Scale, adapted from the work of Marsh et al. (2013). Participants were asked to list an activity very important to them and, subsequently, to indicate their agreement with 12 statements while thinking about this activity. The items aimed to assess harmonious passion (6 items, e.g., “*This activity is in harmony with the other activities in my life*”), and obsessive passion (6 items, e.g., “*I have difficulties controlling my urge to engage in this activity*”). Answers were provided through a 7-point Likert scale (1 = “*Totally disagree*”; 7 = “*Totally agree*”) and were averaged to form a single harmonious passion score (Cronbach's $\alpha = 0.68$) and a single obsessive passion score (Cronbach's $\alpha = 0.83$).

Extremism

The proneness to extremism was assessed through an adjusted version of the Extremism Scale (Szumowska,

Table 1 Types of passionate activity listed in the Passion Scale and the percentage of participants engaging in each one (Study 1)

Passionate activity	Examples of activity	% of Participants
Hobby	Listening to music, cooking, watching films/TV series	52.2
Sport	Basketball, cycling, running	16.5
Job	Business, Psychologist, Doctor	10.4
Education	Studying	9.6
Interpersonal relationship	Spending time with partner/family/friends, volunteering	7.2
Culture	Going to the theatre, reading poems, visiting museums	2.4
Life goal	Working on oneself, upholding human rights, acquiring new skills	1.6
Total		100

2020). The original version of the Extremism Scale was in English; thus, we translated the Extremism Scale in Italian under the supervision of a bilingual collaborator. Participants were asked to indicate the extent to which their life was dominated by one main goal (12 items, e.g., “I usually invest all of my time and energy into the one thing that matters to me the most”). Items were rated on a 7-point Likert scale (1 = “Definitely disagree”; 7 = “Definitely agree”) and were averaged to form a single extremism score (Cronbach’s alpha = 0.95). Moreover, results from the CFA showed good fit to the data [$\chi^2(54) = 270.67, p < 0.001, CFI = 0.96, RMSEA = 0.12, SRMR = 0.05$], with all factor loadings over 0.65. RMSEA exceeded the recommended cutoff of 0.08 (Schermelleh-Engel et al., 2003). However, we reached an acceptable fit in CFI (> 0.90) and SRMR (< 0.10). Thus, overall, the results from the CFA showed a satisfactory fit to the data (Hu & Bentler, 1998). The items of the Italian version of the Extremism Scale can be found in Appendix B.

Analysis strategy

To determine the minimum sample size for the mediation model, we used the online tool “Monte Carlo Power Analysis for Indirect Effects” by Schoemann, Boulton, and Short (2017). Assuming medium effect sizes, the confidence level set at 95 percent, and power set at 0.80, 5000 Monte Carlo simulations suggested a sample of 207 to detect the first indirect effect of ambition on extremism through obsessive

passion and 212 to detect the second indirect effect of ambition on extremism through harmonious passion.

The analyses were conducted using SPSS Statistic version 25.0. To test the mediation model, we used PROCESS v3.5, Model 4 (Hayes, 2018) and bias corrected confidence intervals were obtained with 5000 bootstrap samples.

Furthermore, we tested the invariance of the mediation model across gender and countries using the package path for Structural Equation Modeling (SEM) in jamovi Version 1.8. Particularly, we used multi-group path analyses to test whether the effects found in the mediation model were the same when comparing males with females and Italian with American participants. We ran the multi-group analyses setting equality constraints on the indirect effect of ambition on extremism through both obsessive and harmonious passion and on the direct effect of ambition on extremism.

Results

The present study investigates the hypothesis that ambition can lead to extremism through obsessive passion *and not* through harmonious passion. Table 1 shows types of passionate activity listed in the Passion Scale and the percentage of participants engaged in each one. Correlations between variables are presented in Table 2. As expected, we found a positive correlation between ambition and both harmonious and obsessive passion and between ambition

Table 2 Descriptive statistics and correlations between ambition, obsessive and harmonious passion, and extremism (Study 1; N = 249)

	M (SD)	Correlations			
		Ambition	Obsessive Passion	Harmonious Passion	Extremism
Ambition	3.23 (0.84)	–			
Obsessive Passion	3.88 (1.46)	0.14*	–		
Harmonious Passion	5.23 (0.93)	0.22**	0.27**	–	
Extremism	3.33 (1.44)	0.33**	0.51**	0.04	–

* $p < 0.05$. ** $p < 0.01$

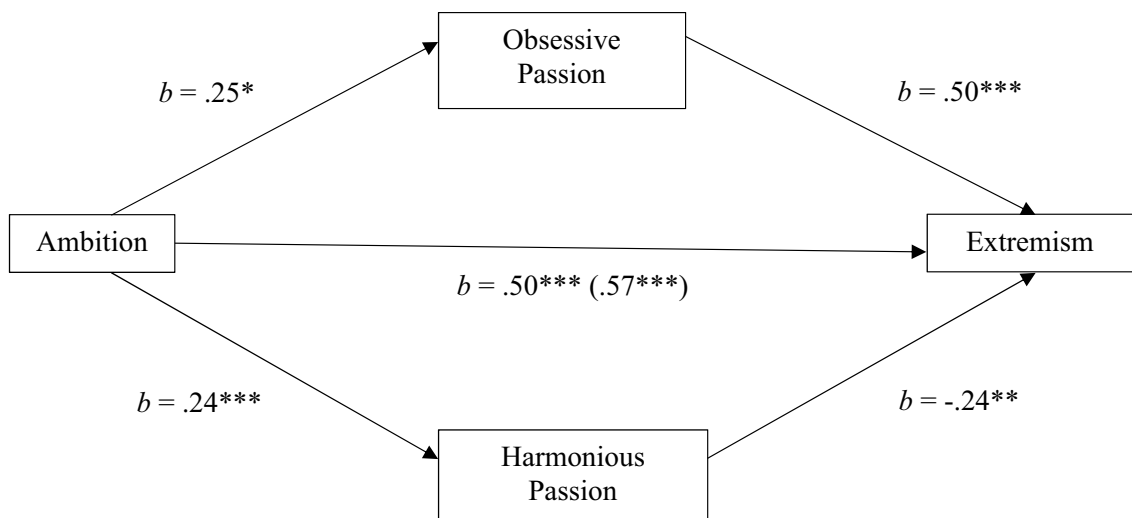


Fig. 1 Coefficients representing effects of ambition on passion and extremism. The total effect of ambition is included in parenthesis (Study 1; $N=249$). * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

and extremism. Moreover, obsessive passion was highly and positively correlated to extremism while harmonious passion was not correlated with extremism, consistent with the literature (Lafrenière et al., 2009).

As can be seen in Fig. 1, the results of the mediation model showed that ambition positively predicted obsessive passion [$b = 0.25$, $SE = 0.11$, $t = 2.24$, $p = 0.03$, (95% CI = 0.03, 0.46)], which, in turn, positively predicted extremism [$b = 0.50$, $SE = 0.05$, $t = 9.48$, $p < 0.001$, (95% CI = 0.40, 0.61)]. Ambition also positively predicted harmonious passion [$b = 0.24$, $SE = 0.07$, $t = 3.46$, $p < 0.001$, (95% CI = 0.10, 0.37)], which, in turn, negatively predicted extremism [$b = -0.24$, $SE = 0.08$, $t = -2.87$, $p = 0.005$, (95% CI = -0.41, -0.08)].

Moreover, we found a significant and positive indirect effect of ambition on extremism via obsessive passion [Effect = 0.12, $SE = 0.06$, (95% CI = 0.01, 0.24)] and a significant and negative indirect effect of ambition on extremism via harmonious passion [Effect = -0.06, $SE = 0.03$, (95% CI = -0.13, -0.01)]. The results of the pairwise contrast of the indirect effects showed that the specific indirect effect through obsessive passion was larger than the specific indirect effect through harmonious passion, with a 95% CI of 0.05 to 0.31. The results also showed a significant positive direct effect of ambition on extremism. Controlling for age and gender did not change the pattern of results.

Given the correlational nature of the data, we tested an alternative model in which obsessive passion predicted ambition, which, in turn, predicted extremism. To test the alternative model, we used PROCESS v3.5, Model 4 (Hayes, 2018). Particularly, we ran the mediation model

using obsessive passion as independent variable, ambition as mediator, extremism as dependent variable and harmonious passion as covariate. As expected, the results showed no significant indirect effect of obsessive passion on extremism through ambition [Effect = 0.03, $SE = 0.02$, (95% CI = -0.01, 0.07)].

Discussion

In the first study, we aimed to investigate the relationship between ambition and extremism, and, more specifically, the mediating role of passion in this relationship. Based on the suggestion that ambition constitutes a version of quest for significance and given the established relationship between significance quest and extremism, we hypothesized that ambition could similarly lead to extremism. Particularly, we wanted to demonstrate that ambitious individuals are more prone to extremism via obsessive passion, and not via harmonious passion. The results obtained in Study 1 supported our hypothesis. Specifically, we found that ambitious individuals are prone to engage in their activities both in an obsessive and harmonious way. However, only obsessive passion led to greater proneness to extremism. Harmonious passion, indeed, negatively predicted extremism.

Our results suggest that ambitious individuals are prone to develop both obsessive and harmonious passion toward activities to which they are strongly committed. However, only when ambition is funneled into obsessive passion, then individuals are prone to extremism. In fact, when ambitious individuals develop a harmonious passion, they are less prone to engage in extremism. Thus, identifying which kind of passion characterizes an ambitious person could be a key factor in predicting the

occurrence of extremism. We also found a noticeable difference between indirect effects, suggesting that obsessive passion had a greater impact than harmonious passion in mediating the relationship between ambition and extremism. Finally, we found a direct effect of ambition on extremism. Thus, it is important to bear in mind that it is not only passion that has an influence on extremism. Indeed, ambitious individuals can directly engage in extremism, independently of the kind of passion they exhibit.

These results are consistent with literature on passion (e.g., B elanger et al., 2013) and seem to be the first evidence that ambition, like the quest for significance more broadly, is associated with extremism. Additionally, our findings contribute to the existing knowledge about the dynamics and consequences of ambition.

Due to the correlational nature of the data, we were not able to draw causal inferences. Thus, we tested the alternative model in which obsessive passion was the independent variable and ambition was the mediator. The results showed that the indirect effect of obsessive passion on extremism via ambition, controlling for harmonious passion, was not significant, thus corroborating our hypotheses. In order to replicate our results in a different sample, we conducted a second study.

Study 2

The results of Study 1 were consistent with our hypothesis, and we conducted a second study to bolster our hypothesis and generalize our findings. In Study 2, we tested the same mediation model in a different population. Our aim was to replicate the results obtained in Study 1 through samples of different nationality. We used the same analysis strategy employed in Study 1.

Method

Procedures, design and participants

The study was approved by the Ethics Committee of Department of Developmental and Social Psychology at Sapienza University of Rome. As in Study 1, we decided to recruit only participants aged between 18 and 50 years old in order to avoid high variability in relation to age. Three hundred American adults (55.7 percent male; $M_{\text{age}} = 31.29$, $SD_{\text{age}} = 8.47$) were recruited online through paid procedure, provided by Prolific, to take part in a correlational study. In the sample, 17 percent of the participants had a higher education, 32.3 percent had a bachelor's degree and 4.7 percent had a PhD degree. After giving informed consent, each participant filled out an online questionnaire

through Qualtrics aimed at assessing ambition, passion, and extremism.

Measures

Ambition, passion, and extremism

Participants responded to the English version of the Ambition Scale (Resta & Pierro, 2021), employed in the first study. Since the original version of the Ambition Scale was in Italian, we translated it in English under the supervision of a bilingual collaborator. In the present sample, the Ambition Scale showed an excellent reliability (Cronbach's $\alpha = 0.91$) and results from the CFA showed good fit to the data [$\chi^2(35) = 186.19$, $p < 0.001$, $CFI = 0.96$, $RMSEA = 0.12$, $SRMR = 0.056$], with all factor loadings over 0.64. As in Study 1, RMSEA exceeded the recommended cutoff of 0.08 (Schermelleh-Engel et al., 2003). However, we reached an acceptable fit in CFI (> 0.90) and SRMR (< 0.10). Thus, results from the CFA showed a satisfactory fit to the data (Hu & Bentler, 1998). Subsequently, participants responded to the English version of the Passion Scale (Marsh et al., 2013) that was used in Study 1. The harmonious passion score showed a good reliability (Cronbach's $\alpha = 0.83$); as did the obsessive passion score (Cronbach's $\alpha = 0.84$). Finally, participants filled out the Extremism Scale (Szumowska, 2020), employed in the Study 1, which showed an excellent reliability (Cronbach's $\alpha = 0.94$). Additionally, results from the CFA showed satisfactory fit to the data [$\chi^2(54) = 242.05$, $p < 0.001$, $CFI = 0.97$, $RMSEA = 0.11$, $SRMR = 0.05$], with all factor loadings over 0.58. As in Study 1, RMSEA exceeded the recommended cutoff of 0.08 (Schermelleh-Engel et al., 2003). However, acceptable fit was reached in CFI (> 0.90) and SRMR (< 0.10). Thus, results from the CFA showed a satisfactory fit to the data (Hu & Bentler, 1998). The items of English version of the Ambition Scale and Extremism Scale can be found respectively in Appendix C and Appendix D.

Results

As in Study 1, our aim was to demonstrate that ambition can lead to extremism through obsessive passion *and not* through harmonious passion. Table 3 shows types of passionate activity listed in the Passion Scale and the percentage of participants engaged in each one. Correlations between variables are presented in Table 4. Ambition was positively correlated with both harmonious and obsessive passion and with extremism. Furthermore, obsessive passion was highly and positively correlated with extremism while harmonious passion was not correlated with extremism, confirming the results we found in Study 1.

Table 3 Types of passionate activity listed in the Passion Scale and the percentage of participants engaging in each one (Study 2)

Passionate activity	Examples of activity	% of Participants
Hobby	Listening to music, cooking, watching films/TV series	54
Sport	Basketball, cycling, running	20.3
Interpersonal relationship	Spending time with partner/family/friends, volunteering	11
Job	Business, Psychologist, Doctor	5.3
Life goal	Working on oneself, upholding human rights, acquiring new skills	3
Education	Studying	2.3
Culture	Going to the theatre, reading poems, visiting museums	2
Other		2
Total		100

Table 4 Descriptive statistics and correlations between ambition, obsessive and harmonious passion, and extremism (Study 2; N = 300)

	<i>M (SD)</i>	Correlations			
		Ambition	Obsessive Passion	Harmonious Passion	Extremism
Ambition	3.51 (0.83)	–			
Obsessive passion	3.85 (1.40)	0.26**	–		
Harmonious passion	5.40 (0.10)	0.40**	0.12*	–	
Extremism	3.96 (1.33)	0.36**	0.49**	0.11	–

* $p < 0.05$. ** $p < 0.01$

As with the first study, the results of the mediation model showed that ambition positively predicted both obsessive [$b = 0.44$, $SE = 0.09$, $t = 4.59$, $p < 0.001$, (95% CI = 0.25, 0.62)] and harmonious passion [$b = 0.49$, $SE = 0.06$, $t = 7.61$, $p < 0.001$, (95% CI = 0.36, 0.61)]. Obsessive passion, in turn, positively predicted extremism [$b = 0.40$, $SE = 0.05$, $t = 8.42$, $p < 0.001$, (95% CI = 0.31, 0.49)]. Unlike in Study 1, however, in Study 2, although harmonious passion negatively predicted extremism, this relationship was not significant [$b = -0.07$, $SE = 0.07$, $t = -1.03$, $p = 0.3039$, (95% CI = -0.21 , 0.07)], (see Fig. 2).

Moreover, we found a significant and positive indirect effect of ambition on extremism via obsessive passion (Effect = 0.17, $SE = 0.05$, [95% CI = 0.09, 0.28]). We did not find an indirect effect of ambition on extremism via harmonious passion [Effect = -0.04 , $SE = 0.04$, (95% CI = -0.11 , 0.03)]. The results of the pairwise contrast of the indirect effects showed a significant difference between the indirect effects, thus supporting the results obtained in Study 1. In particular, the specific indirect effect through obsessive passion was larger than the specific indirect effect through harmonious passion with a 95% CI of 0.10 to 0.34. The results also showed a significant positive direct effect of ambition on extremism. Controlling for age and gender did not change the pattern of results.

As in Study 1, we tested the alternative model in which obsessive passion predicted ambition, which, in

turn, predicted extremism, while controlling for harmonious passion. The results showed a significant indirect effect of obsessive passion on extremism via ambition [Effect = 0.05, $SE = 0.02$, (95% CI = 0.02, 0.09)].

Multi-Group Path Analyses Restricting the parameters of the mediation model to be equal across the two countries did not result in a significantly worse fit than if parameters were allowed to vary freely ($\chi^2(3) = 0.974$, $p = 0.807$), indicating that the effects were equal across countries. Similarly, restricting the parameters of the mediation model to be equal across gender did not result in a significantly worse fit than if parameters were allowed to vary freely ($\chi^2(3) = 6.77$, $p = 0.080$), thus, indicating that the effects were equal across gender too.

Discussion

The results obtained in Study 2 generally supported those found in Study 1, with a sample of different nationality. As in the first study, we found that ambition positively predicted both obsessive and harmonious passion, thus supporting the idea that ambitious people are prone to engage in their activities both in an obsessive and harmonious fashion. Additionally, we confirmed that ambition leads to extremism through obsessive passion. However, in Study 2, we did not find a mediating role of harmonious

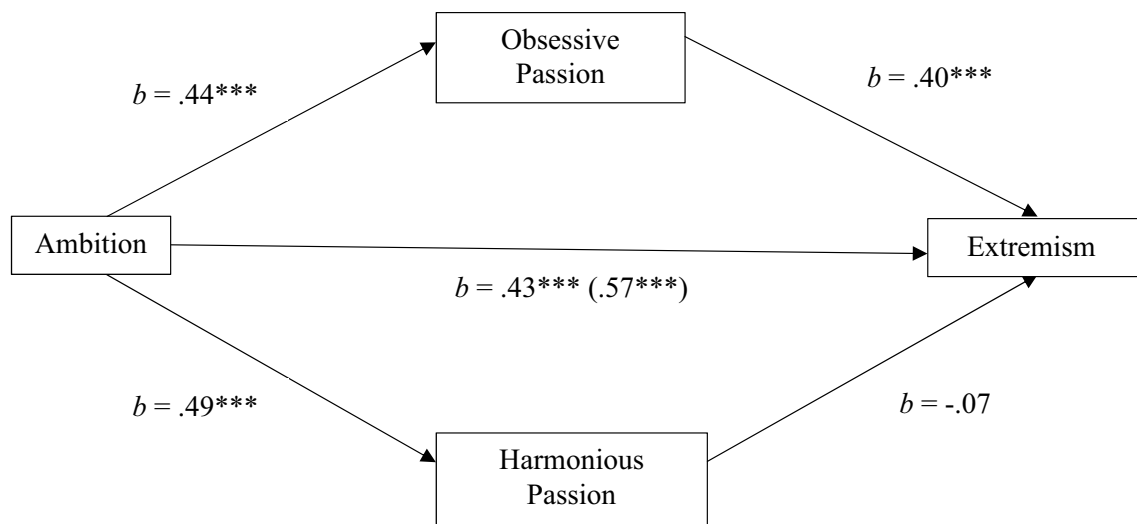


Fig. 2 Coefficients representing effects of ambition on passion and extremism. The total effect of ambition is included in parenthesis (Study 2; $N = 300$). * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

passion. Although the relationship between harmonious passion and extremism was not significant, the effect was negative. Thus, both studies obtained results in the same direction regarding the relationship between harmonious passion and extremism, though the relationship was significant only in Study 1. Furthermore, in both studies, we found a noticeable difference between the indirect effects of obsessive and harmonious passion in the relationship between ambition and extremism, bolstering the evidence that obsessive passion had a greater impact than harmonious passion in the mediation model. Finally, in the second study we confirmed that ambition has a direct effect on extremism, suggesting that ambitious individuals can directly engage in extremism.

As in Study 1, the correlational nature of the data did not allow us to draw causal inferences. When testing the alternative model, we found a significant indirect effect of obsessive passion on extremism via ambition. However, the effect size of the indirect effect is considerably smaller than the indirect effect of ambition on extremism via obsessive passion. Thus, we can reasonably sustain that the model we hypothesized resulted in a better fit with the data.

General discussion

In both of the studies described in this article, we found support for our hypothesis that ambition can lead to extremism through obsessive passion. Specifically, Study 1 and Study 2, which utilized samples of Italian and American adults, respectively, demonstrated that ambition is positively related to both obsessive and harmonious

passion, a result consistent with prior literature suggesting that ambition involves commitment to one's own goals and persistence in different realms (e.g., Judge & Kammeyer-Mueller, 2012). Thus, ambitious individuals are prone to engage in activities they love, in both an obsessive and harmonious fashion. In both studies, we found that obsessive passion significantly positively predicted extremism. We also found that harmonious passion was negatively related to extremism, although this relationship was significant only in Study 1. However, when testing the model invariance, we found that the indirect effect of ambition on extremism through harmonious passion was the same across countries (thus, across the two studies).

Therefore, when ambitious individuals are characterized by an obsessive passion, they are more inclined to extremism; whereas, when they are characterized by a harmonious passion, they are less inclined to extremism. These results are consistent with studies which found that obsessively passionate dancers were more likely to return to dancing before fully recovering from injuries (Rip et al., 2006) and that obsessively passionate workers were more likely to exhibit workaholism (Dalla Rosa & Vianello, 2020). The results are also consistent with findings that harmonious passion negatively predicts engagement in radical networks (Bélanger et al., 2020). Moreover, a test of model invariance across countries and gender showed that the effects of the mediation model were the same when comparing males with females and Italians with Americans.

The results of these two studies provide an important link in the chain between ambition and extremism. Ambition and passion together do not necessarily lead to extremism. Rather, it is only when ambition is coupled with *obsessive* passion, and not with harmonious passion,

that the individual sets aside all else in order to pursue the object of their passion and attain great significance. It is notable that the direct effect of ambition on extremism was also significant, in addition to the indirect effect of ambition on extremism via obsessive passion. Given that ambition is conceptually close to the quest for significance, this result is unsurprising. The addition of obsessive passion into the model illuminates the path by which ambition and passion can together become maladaptive. However, the addition of harmonious passion into the model illuminates the way that ambitious and passionate people can pursue their goals without sliding into extremism and sacrificing their other needs, goals, and facets of their identities. The mediation models presented in this article demonstrate that ambitious people, generally, are prone to extremism, but also that the relationship between ambition and extremism is mediated by obsessive, not harmonious, passion. That is, ambitious people are likely to be passionate about pursuing their goals, but it is only when they pursue their goals obsessively, at the expense of all other needs, that they engage in extremism. When ambitious people passionately pursue their goals while also attending to their other needs, they are less likely to engage in extremism.

The primary limitation of this study is that our mediational model was tested using correlational data; thus, we cannot draw causal inferences. However, in both studies we tested the alternative model in which obsessive passion was the independent variable and ambition was the mediator. In Study 1, the results showed a small and non-significant indirect effect of obsessive passion on extremism via ambition. On the other hand, in Study 2, we found a significant—though small—indirect effect of obsessive passion on extremism via ambition. Overall, those findings confirm that the model we hypothesized resulted in a better interpretation of data in both studies. Moreover, the paths between obsessive and harmonious passion and extremism have both been demonstrated in experimental designs (Bélanger et al., 2019, 2020). The second limitation of this study concerns the fact that the results come from a cross-sectional study, so they could have been affected by common method/sources bias. Future studies should experimentally explore the relationships between ambition and obsessive and harmonious passion, as well as the relationship between ambition and extremism.

The theoretical and practical implications of this study are plentiful. First, this study supports the Significance Quest Theory in demonstrating that ambition, as the desire to be recognized and respected, can be conceived as a type of significance quest, as the two may be similarly operationalized and can both result in extremism. Next, the study provides new findings to the existing literature on ambition, which has largely focused on workplace and organizational contexts, and less so on individual outcomes in other settings. Moreover, it is notable that the

measure of extremism employed in this study assessed extremism in general. Particularly, extremism is conceived as an enduring imbalance between needs. The measure we used assessed how many emotional, motivational, cognitive, and behavioral resources are devoted towards one main goal, in spite of other goals. Thus, future studies could explore extremism, as a consequence of ambition, in more specific contexts. Similarly, we explored the relationship between passion and ambition in general, rather than within specific contexts. Some previous research has found that one's needs, such as the need for significance, are predictive of obsessive passion only if they occur outside of the activity about which the individual is passionate (Lalande et al., 2017), and the present research did not specify such contexts. Future studies should therefore examine ambition and passion, in addition to extremism, in specific contexts. Practically, as mentioned previously, these studies demonstrate that efforts to prevent extremism may focus on promoting harmonious rather than obsessive passion, especially in ambitious people. However, it is critical to note that the studies also found a direct effect of ambition on extremism, a result that is likely closely interwoven with the quest for significance. Therefore, efforts to prevent extremism must also keep in mind that ambitious individuals, like those high on the quest for significance, may be prone to extremism, which can be (but need not be) antisocial and violent. Moreover, the strong direct effect of ambition on extremism, obtained in both studies, suggests that some other crucial variables could explain how ambitious individuals engage in extremism. For instance, we can conceive that ambition leads individuals to perceive difficult tasks as important and feasible to accomplish. This perception could, in turn, motivate them to devote emotional, motivational, cognitive, and behavioral resources towards a given difficult at the expense of other concerns, thus leading to extremism. Future studies should explore this and other possible mediators of the relationship between ambition and extremism.

Conclusion

The present research aimed to enrich knowledge regarding ambition and particularly, to investigate the relationship between ambition and extremism. We tested a parallel mediation model, with the hypothesis that ambition leads to extremism through obsessive and not harmonious passion. Across two studies, we found support for our predictions. Those findings shed new light on the dynamics of ambition, suggesting a possible mechanism for preventing extremism in ambitious individuals, and paving the way for the exploration of other possible consequences of this construct.

Appendix A: The Ambition Scale (Italian version)

Indichi il Suo grado di accordo per ciascuna delle seguenti affermazioni usando la scala che segue:

1 = Completamente in disaccordo—5 = Completamente d'accordo.

Items					
1	Sono ambizioso	1	2	3	4 5
2	Fare qualcosa che lasci un segno è un mio obiettivo	1	2	3	4 5
3	Aspiro ad avere successo	1	2	3	4 5
4	Miro a fare qualcosa di speciale	1	2	3	4 5
5	Non smetto mai di cercare di superare i miei limiti	1	2	3	4 5
6	Miro sempre più in alto di quanto sappia di poter fare	1	2	3	4 5
7	Cerco sempre di distinguermi dagli altri in quello che faccio	1	2	3	4 5
8	Aspiro a fare o avere qualcosa di invidiabile	1	2	3	4 5
9	Aspiro ad occupare posizioni di prestigio e responsabilità	1	2	3	4 5
10	Ottenere riconoscimenti, considerazione e rispetto per quello che faccio è molto importante per me	1	2	3	4 5

Appendix B: The Extremism Scale (Italian version)

Di seguito Le chiederemo alcune informazioni riguardo ai Suoi pensieri, sentimenti e comportamenti nel raggiungimento di obiettivi. Le chiediamo cortesemente di indicare per ogni affermazione la risposta che la descrive nel modo migliore. Sia onesto nel rispondere, non ci sono risposte giuste o sbagliate!

1—Assolutamente in disaccordo 2—In disaccordo 3—Leggermente in disaccordo 4—Nè d'accordo nè in disaccordo 5—Leggermente d'accordo 6—D'accordo 7—Assolutamente d'accordo.

Items						
1	Solitamente, la mia vita è dominata da un solo obiettivo/desiderio principale	1	2	3	4 5 6 7	
2	Solitamente investo tutto il mio tempo e le mie energie nella sola cosa di cui mi importa di più	1	2	3	4 5 6 7	
3	Spendo la maggior parte del tempo a pensare all'obiettivo che per me conta più di tutti	1	2	3	4 5 6 7	
4	Generalmente, la mia felicità dipende dall'unica cosa che per me ha più significato	1	2	3	4 5 6 7	
5	Quando mi dedico al raggiungimento di un obiettivo, tutto il resto diventa insignificante	1	2	3	4 5 6 7	
6	Solitamente, c'è un solo obiettivo che domina la mia mente	1	2	3	4 5 6 7	
7	Spesso, tutta la mia vita è condizionata dalla cosa che ritengo più importante	1	2	3	4 5 6 7	
8	Quando mi focalizzo sull'obiettivo per me più importante, facilmente dimentico le altre cose	1	2	3	4 5 6 7	
9	C'è solo una cosa nella vita che è in grado di rendermi felice	1	2	3	4 5 6 7	
10	Rimango fedele all'obiettivo che ritengo più importante, anche se questo comporta sacrificare altri miei obiettivi	1	2	3	4 5 6 7	
11	Quando scelgo qualcosa, cerco di ottenerlo come se la mia vita dipendesse da questo	1	2	3	4 5 6 7	
12	Reagisco in modo molto emotivo a tutto ciò che riguarda l'obiettivo per me più importante	1	2	3	4 5 6 7	

Appendix C: The Ambition Scale (English version)

Please indicate how much you agree with each of the following items, using the following scale:

1 = Definitely disagree—5 = Definitely agree.

Items					
1	I am ambitious	1	2	3	4 5
2	One of my goals is doing something that leaves a mark	1	2	3	4 5
3	I aim to succeed	1	2	3	4 5
4	I aspire to do something special	1	2	3	4 5
5	I never stop trying to overcome my limits	1	2	3	4 5
6	I always aim higher than I know I can do	1	2	3	4 5
7	I always try to stand out in what I do	1	2	3	4 5

Items						
8	I aim to do or have something enviable	1	2	3	4	5
9	I aim to hold positions of prestige and responsibility	1	2	3	4	5
10	Attaining recognition, respect and consideration for what I do is very important to me	1	2	3	4	5

Items								
9	There is only one thing that can make me happy in life	1	2	3	4	5	6	7
10	I stay faithful to my most important goal, even when it requires sacrifices to my other goals	1	2	3	4	5	6	7
11	When I decide on something, I go for it like my life depended on it	1	2	3	4	5	6	7
12	I react very emotionally to anything that is related to my most important goal	1	2	3	4	5	6	7

Appendix D: The Extremism Scale (English version)

Below, we will ask you about your thoughts, feelings, and behaviors related to goal pursuit. In each statement, please select an answer that describes you best. Be honest—there are no right or wrong answers!

1—Definitely disagree 2—Disagree 3—Slightly disagree 4—Neither agree nor disagree.

5—Slightly agree 6—Agree 7—Definitely Agree.

Items								
1	My life is usually dominated by one main pursuit/desire	1	2	3	4	5	6	7
2	I usually invest all of my time and energy into the one thing that matters to me the most	1	2	3	4	5	6	7
3	I spend most of my time thinking about the one goal that matters to me the most	1	2	3	4	5	6	7
4	Typically, my happiness depends on the one thing that I value most	1	2	3	4	5	6	7
5	When I devote myself to a goal, everything else becomes insignificant	1	2	3	4	5	6	7
6	There is usually one goal that looms large in my mind	1	2	3	4	5	6	7
7	My entire life is often subordinated to the one thing I find most important	1	2	3	4	5	6	7
8	When I focus on my most important goal, I easily forget other things	1	2	3	4	5	6	7

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Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

Ethical approval The study was approved by the Ethics Committee of Department of Social and Developmental Psychology at “La Sapienza” University of Rome (protocol N. 808).

Consent to participate Informed consent was obtained from all individual participants included in the present research.

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References

- Bélanger, J. J., Lafrenière, M. A. K., Vallerand, R. J., & Kruglanski, A. W. (2013). When passion makes the heart grow colder: The role of passion in alternative goal suppression. *Journal of Personality and Social Psychology*, *104*(1), 126–147. <https://doi.org/10.1037/a0029679>
- Bélanger, J. J., Robbins, B. G., Muhammad, H., Moyano, M., Nisa, C. F., Schumpe, B. M., & Blaya-Burgo, M. (2020). Supporting political violence: The role of ideological passion and social network. *Group Processes & Intergroup Relations*, *23*(8), 1187–1203. <https://doi.org/10.1177/1368430220933954>
- Bélanger, J. J., Schumpe, B. M., & Nisa, C. F. (2019). How passionate individuals regulate their activity with other life domains: A goal-systemic perspective. *Journal of Personality*, *87*(6), 1136–1150. <https://doi.org/10.1111/jopy.12463>
- Dalla Rosa, A., & Vianello, M. (2020). Linking calling with workaholism: Examining obsessive and harmonious passion as mediators and moderators. *Journal of Career Assessment*, *28*(4), 589–607. <https://doi.org/10.1177/1069072720909039>
- DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*, *93*(5), 880–896. <https://doi.org/10.1037/0022-3514.93.5.880>
- Giles, D. (2000). *Illusions immortality: A psychology of fame and celebrity*. Macmillan Press LTD.
- Goldsmith, B. (2005). *Obsessive genius: The inner world of Marie Curie*. WW Norton & Company.
- Hansson, R. O., Hogan, R., Johnson, J. A., & Schroeder, D. (1983). Disentangling type A behavior: The roles of ambition, insensitivity, and anxiety. *Journal of Research in Personality*, *17*(2), 186–197. [https://doi.org/10.1016/0092-6566\(83\)90030-2](https://doi.org/10.1016/0092-6566(83)90030-2)
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis*. The Guilford Press.
- Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, *3*, 424–453.
- Jones, A. B., Sherman, R. A., & Hogan, R. T. (2017). Where is ambition in factor models of personality? *Personality and Individual Differences*, *106*, 26–31. <https://doi.org/10.1016/j.paid.2016.09.057>
- Judge, T. A., & Kammeyer-Mueller, J. D. (2012). On the value of aiming high: The causes and consequences of ambition. *Journal of Applied Psychology*, *97*(4), 758–775. <https://doi.org/10.1037/a0028084>
- Kruglanski, A. W., Gelfand, M. J., Bélanger, J. J., Sheveland, A., Hetiarachchi, M., & Gunaratna, R. (2014). The psychology of radicalization and deradicalization: How significance quest impacts violent extremism. *Political Psychology*, *35*, 69–93. <https://doi.org/10.1111/pops.12163>
- Kruglanski, A. W., Molinaro, E., Jasko, K., Webber, D., Leander, N. P., & Pierro, A. (2022). Significance-quest theory. *Perspectives on Psychological Science*. <https://doi.org/10.1177/17456916211034825>
- Kruglanski, A. W., & Orehek, E. (2011). The role of the quest for personal significance in motivating terrorism. In J. Forgas, A. Kruglanski, & K. Williams (Eds.), *The psychology of social conflict and aggression* (pp. 153–166). Psychology Press.
- Kruglanski, A. W., Szumowska, E., Kopetz, C. H., Vallerand, R. J., & Pierro, A. (2021). On the psychology of extremism: How motivational imbalance breeds intemperance. *Psychological Review*, *128*(2), 264–289. <https://doi.org/10.1037/rev0000260>
- Lafrenière, M. A. K., Bélanger, J. J., Sedikides, C., & Vallerand, R. J. (2011). Self-esteem and passion for activities. *Personality and Individual Differences*, *51*(4), 541–544. <https://doi.org/10.1016/j.paid.2011.04.017>
- Lafrenière, M. A. K., Vallerand, R. J., Donahue, E. G., & Lavigne, G. L. (2009). On the costs and benefits of gaming: The role of passion. *CyberPsychology & Behavior*, *12*(3), 285–290. <https://doi.org/10.1089/cpb.2008.0234>
- Lalande, D., Vallerand, R. J., Lafrenière, M. A. K., Verner-Filion, J., Laurent, F. A., Forest, J., & Paquet, Y. (2017). Obsessive passion: A compensatory response to unsatisfied needs. *Journal of Personality*, *85*(2), 163–178. <https://doi.org/10.1111/jopy.12229>
- Marsh, H. W., Vallerand, R. J., Lafrenière, M. A. K., Parker, P., Morin, A. J., Carbonneau, N., & Paquet, Y. (2013). Passion: Does one scale fit all? Construct validity of two-factor passion scale and psychometric invariance over different activities and languages. *Psychological Assessment*, *25*(3), 796–809. <https://doi.org/10.1037/a0032573>
- Pettigrove, G. (2007). Ambitions. *Ethical Theory and Moral Practice*, *10*(1), 53–68. <https://doi.org/10.1007/s10677-006-9044-4>
- Resta, E., & Pierro, A. (2021). *Validation of Ambition Scale*. Unpublished manuscript.
- Rip, B., Fortin, S., & Vallerand, R. J. (2006). The relationship between passion and injury in dance students. *Journal of Dance Medicine & Science*, *10*(1–2), 14–20.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, *8*(2), 23–74.
- Schoemann, A. M., Boulton, A. J., & Short, S. D. (2017). Determining power and sample size for simple and complex mediation models. *Social Psychological and Personality Science*, *8*, 379–386. <https://doi.org/10.1177/1948550617715068>
- St-Louis, A. C., Carbonneau, N., & Vallerand, R. J. (2016). Passion for a cause: How it affects health and subjective well-being. *Journal of Personality*, *84*(3), 263–276. <https://doi.org/10.1111/jopy.12157>
- Szumowska, E. (2020). *The Extremism Scale*. Unpublished manuscript.
- Vallerand, R. J. (2010). On passion for life activities: The dualistic model of passion. In *Advances in experimental social psychology* (Vol. 42, pp. 97–193). Academic Press.
- Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., Gagné, M., & Marsolais, J. (2003). Les passions de l'âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*(4), 756–767. <https://doi.org/10.1037/0022-3514.85.4.756>
- Vallerand, R. J., Mageau, G. A., Elliot, A. J., Dumais, A., Demers, M. A., & Rousseau, F. (2008). Passion and performance attainment in sport. *Psychology of Sport and Exercise*, *9*(3), 373–392. <https://doi.org/10.1016/j.psychsport.2007.05.003>

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