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# The top tier of the Big Five does not predict police decisions in ambiguous and high-pressure situations

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## ABSTRACT

Whilst the link between personality and decision-making has been studied across various domains, the predictive capability of the Big Five model (openness to experience, extraversion, agreeableness, conscientiousness and neuroticism) for police decisions in high-risk ambiguous situations under time pressure remains unexplored. One-hundred and fifty-six cadets in a Spanish police force's commanders' school (78.8% male, aged 21–54) responded to two expert-designed policing scenarios necessitating quick decisions in ambiguous and high-risk conditions, where they had to act or wait for more information through different stages. They then completed the Mini-IPIP. Statistical tests revealed no significant relationships between the Big Five and (a) participants' decision timing or (b) the appropriateness of their decisions (all  $p > 0.05$ ). Linear regressions found no mediation by participants' gender or prior experience. The predictive power of the top tier of the Big Five in these scenarios is not supported; consideration is given to analysing at the facet or subdimension level.

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## Introduction

Police officers frequently encounter unpredictable and potentially uncontrollable situations that necessitate prompt action under conditions of uncertainty, where a failure to act swiftly and effectively can lead to significant consequences. These circumstances are commonly known in the literature as critical incidents (Baldwin et al., 2021). Given the frequency and importance of such situations, it is not surprising that an increasing number of researchers are investigating how police make decisions in critical incidents, often aiming to enhance decision-making through training (Bennell et al., 2022) and increasing officers' awareness of their reactions to them (Stenshol et al., 2024). These studies have identified various factors that may be relevant in police decision-making during critical incidents, including experience (Boulton & Cole, 2016; Suss & Ward, 2018; Ta et al., 2021), the utilisation of schemas (Kavanagh, 2006), perceptual distortions (Klinger & Brunson, 2009), problem-solving approaches (Harris et al., 2017) and attention to auditory and visual information (Roberts & Cole, 2018).

Personality has also been analysed in relation to police decision-making in critical incidents, often through simulations. Girodo (2007) found that officers with low scores in neuroticism and sensation seeking on the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) were more likely to be involved in deadly force encounters, and Huhta et al. (2021), using the assessment instrument employed at Tampere's (Finland) Police University College entrance examinations (Mindfindr, 2020), reported that high extraversion scores were associated with more target-oriented behaviour and environmental control. Some authors have also analysed the influence on decision-making in critical police incidents of specific

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personality traits, such as maximisation, reporting that high scores were associated with greater perceived difficulty (Shortland et al., 2020) and delayed action (Tejeiro et al., 2023).

Despite being one of the most successful and influential personality models, the scarcity of research in this context utilising the Five-Factor Model (FFM; Digman, 1990; McCrae & John, 1992), also known as the Big Five, is notable. The FFM proposes broad traits of openness to experience (sometimes referred to as intellect/imagination; e.g. John & Srivastava, 1999), extraversion, agreeableness, conscientiousness, and neuroticism (or emotional stability) (see Costa & McCrae, 2012, for a discussion of these factors). The influence of these traits on decision-making has been extensively studied in the general population in relation to performance on decision style questionnaires (El Othman et al., 2020), paper-and-pencil problem-solving exercises (Belhekar, 2017) or gambling paradigms (Buelow & Cayton, 2020). Within policing, the FFM has also been widely used in studying aspects, such as absenteeism and citizen complaints (Sanders, 2008), identifying personality profiles among police negotiators (Grubb et al., 2015), analysing job satisfaction (Petasis & Economides, 2020), response to workload (Chiorri et al., 2015), propensity to burnout (Louw, 2014), preference for conflict resolution tactics (Abrahamsen, 2006), copying styles (Ponomarenko et al., 2022) and tendency to post-traumatic stress disorder (Madamet et al., 2018), among others. To the best of our knowledge, the potential influence of FFM traits on police decision-making in critical incidents has not yet been explored. Our work aims to address this research gap by analysing the behaviour of a sample of police commanders under conditions of ambiguity, time pressure and high stakes.

The literature presents contradictory results that hinder the establishment of hypotheses. For instance, in the general population El Othman et al. (2020) associated openness with an intuitive decision-making style, where 'commitment to a course of action is reached relatively quickly' (Harren, 1979, p. 125), whilst Heidari and Rahmati-Arani (2017) linked it to a vigilant decision-making style, in which the individual 'evaluates alternatives carefully before making a choice' (Mann et al., 1997, p. 2). Tentatively, we propose the hypotheses that, in high-ambiguity, time-pressured and high-stakes police situations; (H1) high scores in extraversion will be associated with earlier action; (H2) high scores in conscientiousness and neuroticism will be associated with later action; and (H3), scores in the openness and agreeableness will not have any significant association with the time of action.

The literature also associates gender with differences in decision-making; for example, females have been found to make less risky decisions (Villanueva-Moya & Exposito, 2021) or to require more time to decide (Evans & Hampson, 2015). Similarly, previous experience or familiarity with the situation has been found to impact the processes and outcomes of decision-makers (Perona et al., 2019). With this in mind, the possible role of gender and previous experience in the relationships in H1–H3 above will be explored.

## Materials and methods

### Participants

One hundred and fifty-six students in the final week of their 5-year training to become police commanders in Spain's Guardia Civil Officer Academy (AOGC) participated in the study. Guardia Civil (GC) is one of Spain's two national law enforcement forces; upon completion of their training, students attain the rank of Lieutenant ([www.guardiacivil.es](http://www.guardiacivil.es)). The rank is roughly equivalent to what in other police forces is commonly called an Inspector – they supervise constables and sergeants, implement strategies, policies and crime prevention efforts, analyse data, manage resources and conduct audits. Participants were selected opportunistically through the AOGC, with the only inclusion criterion being active membership. Ages ranged from 21 to 54 years ( $M=33.27$ ,  $SD=10.25$ ); 78.8% were male ( $n=123$ ). Eighty-seven participants (55.8%) had served as police officers before entering the AOGC; their years of experience ranged from 5 to 39 ( $M=17.34$ ,  $SD=7.14$ ). It should be noted that the size of our sample significantly exceeds the 88 participants identified as necessary for a power of 0.95, assuming a medium effect size of 0.5 (Kang, 2021), as calculated using G\*Power (Erdfelder et al., 1996).

### Procedure

We received approval from Liverpool John Moore's University's ethics committee (ref. PsyREC-EAE-001-23/24) and conducted the study in accordance with the 2013 Declaration of Helsinki.

Through internal AOGC communication channels, an invitation was extended to participate in a study focused on 'exploring the factors influencing decision-making in police scenarios.' The announcement provided the researchers' email addresses for further information. Interested individuals participated in the study at their school's lecture theatre using their mobile phones. The online tool began with a welcome message, a participant information sheet, and a consent form. Participants who consented in written by checking the acceptance box proceeded to the survey, which included self-reported gender, age and years of professional experience as police officers before joining the AOGC. After this, two vignettes requiring decision-making and justification under conditions of uncertainty (see below) were presented, followed by a personality questionnaire (see below). The whole process took 15–25 min.

## Materials

### Decision-making

We used two scenarios from Decision-making Immersive Scenarios in Police Uncertain Tactical Environments (DISPUTE), a framework by Tejeiro et al. (2023). DISPUTE vignettes depict situations with lives at risk, time pressure and no possibility to answer by following set instructions or manuals; they were developed by three experts (GC commanders, instructors at the GC officers' school, with extensive tactical experience) and they present situations that police officers frequently encounter in their daily work. The vignettes follow a standardised structure: (a) Scene-setting: Introduces a duty-related situation; (b) Problem situation with two options for immediate action or waiting for more information; if the participant chooses to act, the vignette concludes; if they choose to wait, the next screen is presented; (c) New information, followed by the previous decision; (d) Last information, again followed by the previous decision. After the last screen, participants report their direct experience with similar events: *1=I have no experience at all, 2=I have heard about similar situations in real life but have not experienced them, 3=I have experienced in person at least one such situation in real life.*

The first vignette involves a potential domestic violence (DV) situation, where the participant must decide whether to enter a partially open residence with no response to their calls. This vignette was selected because it represents the most common situation faced by members of the GC among those included in DISPUTE. Likewise, it is the only vignette that allows for legal interpretation. According to the Spanish Constitution (Article 18.2), a home is inviolable, and entry requires owner consent or judicial authorisation, except for a flagrant crime. However, police can enter if there is an urgent public health issue (Organic Law on Citizen Security Protection, Article 15.2) or in exceptional calamities posing imminent harm (Administrative Jurisdiction Law, Article 8.6). The second scenario depicts a sea-rescue (SR) situation, where a person is in perilous conditions in the sea, and the participant must decide whether to jump in for the rescue. Unlike the first scenario, there are no legal guidelines that can influence decision-making; the only general, unwritten reference is not to endanger one's own life by performing tasks for which one is not adequately prepared. The third scenario in Tejeiro et al. (2023) was excluded from the study to limit the time demand on participants.

In the two vignettes, the screen where the participant opts for action (Screen 1–3) was denoted as 'action time.' An additional value of +3 was assigned when the participant chose the waiting option after the third screen. According to the three subject matter experts (SMEs) consulted for the development of DISPUTE, the most appropriate moment to act, considering contextual cues, would be on screen three for the first vignette (DV), whereas participants should not act in any case in the second vignette (SR).

### Personality

Personality was measured using the Mini-IPIP (Donnellan et al., 2006), which comprises 20 items, four for each Big Five scale, with balanced positive and negative phrasing. Despite its brevity and limited content scope, the Mini-IPIP maintains acceptable internal consistency ( $\alpha > 0.60$ ) and shows good convergent validity with established instruments like the 50-item International Personality Item Pool – Five Factor Model (IPIP-FFM; Goldberg, 1999) and the 44-item Big Five Inventory (BFI; John & Srivastava, 1999). The Mini-IPIP's McDonald's omega in this study was acceptable ( $\omega = 0.66$ ).

## Analysis

Data analysis utilised SPSS and AMOS version 29 (SPSS Inc., Chicago, IL). Descriptive statistics summarised overall performance. Reliability of the Mini-IPIP's scales was measured with McDonald's omega. Confirmatory factor analysis evaluated data fit, employing absolute fit (normed Chi-squared,  $\chi^2/\text{df}$ ; standardised root mean square residual [SRMR]), parsimony-adjusted (Steiger-Lind root mean square error of approximation [RMSEA]) and incremental fit indices (Tucker-Lewis index [TLI]; Bentler Comparative Fit Index [CFI]).  $\chi^2/\text{df}$  values of 1–2 suggest good fit and 2–3 an acceptable fit (Carmines & McIver, 1981). Values < 0.08 in the SRMR,  $\leq 0.06$  in the RMSEA (Hu & Bentler, 1999), > 0.90 in the TLI (Ullman, 2001) and  $\geq 0.95$  in the CFI (Hu & Bentler, 1999) indicate a good model fit. Kolmogorov–Smirnov tests revealed non-normal distribution of all variables ( $p > 0.05$ ). Non-parametric Kruskal–Wallis's H and Mann–Whitney's U were used for intergroup comparisons, and effect sizes for Mann–Whitney's U were measured using  $r$ . Multiple linear regressions explored moderation effects.

## Results

### Descriptive statistics

#### Action time

In the DV scenario, 37.2% of participants ( $n=58$ ) chose to act on the second screen, 21.1% ( $n=33$ ) on Screen 1 and 32.1% ( $n=50$ ) on Screen 3. Fifteen percent ( $n=9$ ) did not take any action. In the SR scenario, a higher number decided not to act (35.9%,  $n=56$ ). Among those who acted, percentages decreased with successive screens (39.1%,  $n=61$  on Screen 1; 16.7%,  $n=26$  on screen 2; 8.3%,  $n=13$  on Screen 3).

#### Personality

Descriptive statistics for the items and scales are presented in Table 1. The 5-factor model fit well for normed Chi-squared ( $\chi^2/\text{df} = 1.74$ ) but slightly less for other indices (CFI = 0.80, TFI = 0.78, SRMR = 0.10, RMSEA = 0.07 [CL90 0.06–0.08]). Model fit did not substantially improve when items C1 and/or I2 were removed. Due to the small number of items per scale and the extensive use of Mini-IPIP, all original items were retained for analyses.

### Hypothesis testing

When treating the selected action screen as an ordinal variable, Spearman's correlations with total scores in the five traits showed no significant relationships in both the DV scenario ( $r_s = -0.05$ ,  $p=0.500$  for A;  $r_s = 0.01$ ,  $p=0.930$  for C;  $r_s = 0.03$ ,  $p=0.675$  for E;  $r_s = -0.15$ ,  $p=0.062$  for I;  $r_s = 0.13$ ,  $p=0.102$  for N) and the SR scenario ( $r_s = -0.11$ ,  $p=0.189$  for A;  $r_s = -0.03$ ,  $p=0.754$  for C;  $r_s = 0.03$ ,  $p=0.750$  for E;  $r_s = 0.06$ ,  $p=0.432$  for I;  $r_s = -0.07$ ,  $p=0.377$  for N). Alternatively, considering each screen/decision as a nominal selection and comparing Median scores in each trait across the four screens using Kruskal–Wallis H, all differences were non-significant in both the DV ( $H=1.15$ ,  $p=0.765$  for A;  $H=1.04$ ,  $p=0.791$  for C;  $H=0.31$ ,  $p=0.958$  for E;  $H=3.77$ ,  $p=0.288$  for I;  $H=2.72$ ,  $p=0.441$  for N) and the SR ( $H=1.82$ ,  $p=0.610$  for A;  $H=4.99$ ,  $p=0.172$  for C;  $H=0.75$ ,  $p=0.861$  for E;  $H=3.41$ ,  $p=0.333$  for I;  $H=1.95$ ,  $p=0.582$  for N) scenarios.

Mann–Whitney's U tests comparing scores in each trait between those who acted at the screen identified as correct by the experts and those who acted too early or too late revealed non-significant differences in both the DV scenario ( $U=2611$ ,  $p=0.881$ ,  $r=0.01$  for A;  $U=2551$ ,  $p=0.705$ ,  $r=0.03$  for C;  $U=2513.5$ ,  $p=0.602$ ,  $r=0.04$  for E;  $U=2456.5$ ,  $p=0.458$ ,  $r=0.06$  for I;  $U=2418.5$ ,  $p=0.375$ ,  $r=0.07$  for N) and the SR scenario ( $U=2462$ ,  $p=0.205$ ,  $r=0.10$  for A;  $U=2715$ ,  $p=0.750$ ,  $r=0.03$  for C;  $U=2672$ ,  $p=0.634$ ,  $r=0.04$  for E;  $U=2540$ ,  $p=0.332$ ,  $r=0.08$  for I;  $U=2540.5$ ,  $p=0.335$ ,  $r=0.08$  for N). Multiple linear regressions failed to find any mediating effect of participants' gender or previous experience on the relationship between personality traits and decision-making time. In all cases, the adjusted R-square decreased when the interaction term was included.

**Table 1.** Descriptive statistics for Mini-IPIP items and scales.

	Item/scale	Min	Max	<i>M</i>	<i>SD</i>
A1	Sympathise with others' feelings	1	5	3.86	0.77
A2	Am not interested in other people's problems. (R)	1	5	4.31	0.85
A3	Feel others' emotions.	1	5	3.88	0.73
A4	Am not really interested in others. (R)	1	5	4.48	0.65
C1	Get chores done right away	1	5	3.65	0.85
C2	Often forget to put things back in their proper place. (R)	1	5	3.96	0.98
C3	Like order.	1	5	4.02	0.69
C4	Make a mess of things. (R)	1	5	4.04	0.95
E1	Am the life of the party	1	5	2.90	0.93
E2	Do not talk a lot. (R)	2	5	3.64	1.00
E3	Talk to a lot of different people at parties.	1	5	3.52	0.98
E4	Keep in the background. (R)	2	5	3.87	0.77
I1	Have a vivid imagination	1	5	3.51	0.93
I2	Am not interested in abstract ideas. (R)	1	5	3.46	0.89
I3	Have difficulty understanding abstract ideas. (R)	2	5	3.76	0.78
I4	Do not have a good imagination. (R)	1	5	3.77	0.97
N1	Have frequent mood swings	1	5	1.91	0.92
N2	Am relaxed most of the time. (R)	1	5	2.31	0.84
N3	Get upset easily.	1	5	2.07	0.96
N4	Seldom feel blue. (R)	1	5	2.48	1.16
	Agreeableness	8	20	16.54	2.10
	Conscientiousness	7	20	15.67	2.56
	Extraversion	8	20	13.94	2.66
	Intellect/imagination	7	20	14.49	2.56
	Neuroticism	4	19	8.77	2.76

Notes. 1) (R) identifies reversed items; scores are presented after transformation to direct scores. 2) A: agreeableness; C: conscientiousness; E: extraversion; I: intellect/imagination; N: neuroticism.

## Discussion

This study is the first to explore the potential impact of Big Five traits on decision-making in police contexts marked by high ambiguity, time pressure, and immediate life risk. To achieve our objectives, we asked a sample of police commanders, many with substantial officer experience, to respond to two vignettes prepared by police experts and a widely used personality questionnaire. The key result is the absence of significant relationships, offering support only for the third of our hypotheses.

We initially hypothesised that individuals with high extraversion, known for their comfort with risk-taking, adaptability and reliance on intuition, would confidently navigate uncertain situations, responding more quickly. We anticipated that in high-pressure scenarios, extraverted police officers would feel energised rather than overwhelmed, leading to faster decision-making. However, our study did not find a significant impact of participants' extraversion levels on the screen they selected to act in. In this regard, our study differs from others in which extraversion showed an inverse relationship with procrastination, both in police officers (Ponomarenko et al., 2022) and in the general population (Heidari & Rahmati-Arani, 2017), and a direct relationship with risk-seeking responses (Oehler & Wedlich, 2018). It is possible that some extraverts may prefer seeking input or collaboration before deciding, making the 'waiting for more information' option more appealing. On the other hand, in contrast to studies where delayed police action is viewed as indecision or procrastination (e.g. Shortland et al., 2020), in our study both the 'action' and 'wait' options are conscious decisions. Extravert participants might have been prompt in choosing to wait for additional information, an aspect not measured in our study but worth exploring in future research.

Conscientious individuals might tend to exhibit deliberate and cautious decision-making in complex and ambiguous situations, taking time to analyse information, consider options and weigh potential outcomes (H2). However, we found no such behaviour in highly conscientious participants in our sample, which contrasts with other studies on the general population (El Othman et al., 2020; Jalajas & Pullaro, 2018). The lack of relationship found may imply that some highly conscientious individuals adapt their approach based on the urgency of the situation, potentially adjusting to act more quickly while maintaining their attention to detail. Another explanation, that some conscientious officers adapt their approach based on their familiarity with similar ambiguous scenarios, is not supported by the lack of interaction found between experience and any personality trait.



Our H3 suggested that individuals high in neuroticism might experience increased stress or anxiety in uncertain and risky situations, leading to a more cautious and delayed approach. In our sample, we did not find such a relationship, contrasting with results in police officers (Ponomarenko et al., 2022; using a questionnaire on coping styles) and in the general population (Boyce et al., 2016; using a gambling task). Methodological differences may partly explain this difference. However, it is also possible that the response of individuals high in neuroticism can vary based on their coping mechanisms and past experiences; some may act swiftly to alleviate distress or anxiety caused by the situation. Once again, the absence of interaction between experience and personality seems to play against this possibility.

The data supported our hypothesis that Openness and Agreeableness would not have a significant relationship with the timing of action. Whilst high levels of open-mindedness and creativity might lead individuals to act faster as they may be more flexible in adapting to uncertainty and finding novel approaches (Beghetto, 2019), their tendency to thoroughly explore possibilities and analyse different angles could result in the preference to wait for more information. Similarly, highly agreeable individuals might be expected to act swiftly for the greater good or to prevent harm (Habashi et al., 2016), but their inclination to consider maintaining positive relationships or minimising conflict following legal and internal guidelines might lead to a more deliberate and slower response. It is noteworthy in this regard that participants tended to act later in the DV vignette, where an error could lead to negative legal consequences for the police officer, than in the SR vignette, which only involved physical risk. Qualitative research conducted after collecting psychometric personality data could help clarify these processes.

An explanation for the observed results could be rooted in the theoretical basis of the Big Five model. Whilst the five dimensions are robustly established in the literature, various authors have suggested diverse hierarchical orderings with distinct yet empirically correlated sub-dimensions, factors or facets. For example, the higher-order dimension of extraversion has been broken down into two (DeYoung et al., 2007), three (Soto & John, 2017), four (Watson et al., 2015), five (Watson et al., 2017), six (McCrae et al., 2005) or even seven (Simms, 2009) sub-dimensions. The complexity of this scenario substantially complicates the identification of potential influences of personality on decision-making. Different facets or sub-dimensions of the same trait, despite being correlated, may exert different impacts on behaviour, which would support the need for studying personality at the facet level. For example, Johnson and Bloom (1995) linked procrastination to the six facets of conscientiousness identified by Costa and McCrae (1992), but only with two of the six facets of neuroticism (impulsiveness and vulnerability). This facet-level analysis aligns with research on aspects, such as empathy, which arguably plays a role in police decision-making in situations where civilians' lives are in danger. For instance, Song and Shi (2017) found that neuroticism was strongly associated with one facet of empathy (personal distress), moderately associated with another (perspective-taking), and not related to the third (empathic concern), with similar results for the other Big Five traits.

Various studies have highlighted, on the other hand, that the variability in personality traits among police officers is significantly lower than among the general population, as a result of sharing certain characteristics in advance that lead them to choose careers in law enforcement (Vastola, 1978), as well as of occupational socialisation processes (Mitchell, 2021). The concept of *police personality* has in fact been frequently discussed by researchers (see TenEyck, 2023 for a review) and is parallel to others, such as *military personality* (Jackson et al., 2012). Our results may therefore reflect the conclusion reached by Abrahamsen (2006) in her study with Norwegian police officers: 'more nuanced personality models are necessary in order to capture personality differences between officers, as they were found to constitute a rather homogeneous group' (p. 44).

In addition, responding to written vignettes is substantially different from direct engagement with real-life cases, not only due to the emotional load involved but also because fictional scenarios inherently provide fewer cues compared to real-life situations. Furthermore, the level of accountability in real-life contexts exceeds that of anonymous exercises, posing additional challenges for police officers in navigating stressful situations (Verhage et al., 2018).

The use of SMEs to determine the most appropriate timing for action in the two vignettes may be arguable. Whilst experts are frequently employed in psychological research to establish performance

standards (Rassafiani et al., 2009), we lack sufficient information regarding the SMEs referenced in Tejeiro et al. (2023) to ascertain their expertise as ‘elite, peak, or exceptionally high levels of performance on a particular task or within a given domain’ (Bourne et al., 2014, p. 1). Nevertheless, our study does not focus on whether participants performed better or worse, but rather on whether their personality influenced the timing of their actions – with the aforementioned negative results.

Considering the points discussed above, our results have methodological, theoretical and practical implications. Methodologically and theoretically, future research could use tests with greater content validity than the 20-item Mini-IPIP, like the 50-item IPIP-FFM (Goldberg, 1999). It is also clear that replicating studies using personality measures at the facet level, rather than employing the Big Five in a generic manner, would be beneficial; however, the lack of consensus regarding the possible hierarchical structure of personality makes it challenging to compare results and draw conclusions. At a practical level, psychometric personality tests are extensively used for the selection and promotion of police officers (Barko et al., 2020), but our findings suggest a need for caution in directly applying their results for individual-task matching, particularly in situations marked by high ambiguity and strong pressure. The predictive power of the top tier of the Big Five in these challenging scenarios has not been supported by our study.

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## CRedit author statement

Ricardo Tejeiro: Conceptualisation, Methodology, Formal analysis, Writing Draft. David McIlroy: Conceptualisation, Review and Editing. Marek Palace: Methodology, Review and Editing. Rui Paulo: Review and Editing. José Luis González: Investigation, Resources.

## Disclosure statement

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## Data availability statement

Access to the data collected in this study is restricted in accordance with the provisions outlined in the Organic Law 3/2018 of Personal Data Protection and the Assurance of Digital Rights in Spain. Interested parties can gain access to the data by submitting a request to the corresponding author.

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