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## REVISTA PSICOLOGÍA UNEMI

*Volumen 4, N° 007, julio a diciembre 2020. pp. 53 - 64.*

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### UN ESTUDIO DEL RASGO DE PERSONALIDAD MAQUIAVÉLICA DE LOS MILLENNIALS EN ECUADOR

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(Recibido en abril 2020, aceptado en mayo 2020)

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**Resumen:** Se han realizado estudios maquiavélicos en todo el mundo desde que Christie y Geis demostraron que la prueba de Mach IV es confiable. Ha sido una medida importante en muchos campos particularmente relacionados con el lugar de trabajo. En Ecuador, y en todo el mundo, Millennial está comenzando a formar una gran parte de la fuerza laboral. Hasta la fecha, en Ecuador, no ha habido publicaciones de puntajes maquiavélicos en este grupo demográfico, lo que deja a la gerencia con una herramienta menos valiosa para comprender mejor esta cohorte. Este estudio proporciona una base para la investigación en este campo en Ecuador. El instrumento Mach IV fue traducido al español, con el dialecto ecuatoriano local en mente y probado para mayor claridad. La encuesta fue completada por 440 estudiantes universitarios del Milenio de Guayaquil. Se obtuvieron factores adicionales para evaluar su impacto en los puntajes de Mach de los estudiantes, incluido el género y el nivel socioeconómico subjetivo. Las diferencias de género en las puntuaciones de Mach de las poblaciones en todo el mundo han demostrado ser inconsistentes, donde en algunas poblaciones hay una gran diferencia y en otros estudios no se muestran diferencias significativas. Además, Ecuador es un país socialmente estratificado donde se esperan diferencias de personalidad basadas en el nivel socioeconómico. El estudio concluye que no hay diferencias estadísticamente significativas en los puntajes Mach de estudiantes universitarios de Guayaquil y de género, ni en el nivel socioeconómico.

**Palabras Clave:** Personalidad maquiavélica, millennials, nivel socioeconómico, género, salud psicológica, manipulación, engaño.

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### A MACHIAVELLIAN PERSONALITY TRAIT STUDY OF MILLENNIALS IN ECUADOR

**Abstract:** Machiavellian studies have been conducted across the globe since the Mach IV test was demonstrated to be reliable by Christie and Geis. It has been an important measure in many fields particularly related to the workplace. In Ecuador, and across the globe, Millennial are beginning to make up a large portion of the workforce. To date, in Ecuador, there have been no publications of Machiavellian scores on this demographic, leaving management with one less valuable tool to better understand this cohort. This study provides a basis for research in this field in Ecuador. The Mach IV instrument was translated into Spanish, with the local Ecuadorian dialect in mind and tested for clarity. The survey was completed by 440 millennial university students from Guayaquil. Additional factors were obtained in order to test their impact on students' Mach scores including gender and subjective socio-economic level. Gender differences in Mach scores of populations across the world have shown to be inconsistent, where in some populations there are large difference and in other studies there are no significant difference shown. Additionally, Ecuador is a socially stratified country where there are expected differences in personality based on socio-economic level. The study concludes that there are no statistically significant differences in Mach scores of university students from Guayaquil and gender, nor socio-economic level.

**Keyword:** Machiavellian personality, millennials, socio-economic level, gender, psychological health,

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## INTRODUCCIÓN

Machiavellian studies were established after Niccolò Machiavelli's famous book *The Prince* in 1532. Machiavelli analyzed the behaviors of leaders such as kings and emperors in order to offer a realist's perception of the way things are and how best to rule. The book has come to symbolize the pessimistic view of human beings. Machiavelli believed that all men who seek power should forget about questions of morality and ethics. Deception and manipulations are the best means to achieve political ends. After more than five centuries, his analysis is still relevant appearing in psychological studies to help understand populations with relation to power dynamics in society at large but more particularly in organizational settings and leadership struggles. The first mainstream promoters of Machiavellianism study were Christie and Geis (1970), two psychologists whom dedicated much of their work to study Machiavellian personality traits of populations. Christie and Geis created the first widely accepted instrument to test Machiavellian traits in populations with the Mach-IV inventory test, a 20-question, Likert-scale personality survey. Christie and Geis developed a pool of statements that were either drawn directly from Machiavelli's writings or considered to "tap the same syndrome" (p. 8). Machiavellian studies have been conducted across populations and sub populations such as university students.

Machiavellianism consists of the ability of a person to manipulate, deceive and control other people or situations to gain power. However, according to Paulhus and Williams (2002), in the current body of research Machiavellianism appears to be an indicator of pathological personalities. To be Machiavellian is often perceived as being a narcissist or psychopath. Machiavellian personality types have earned a public image of people associated with the dark triad personalities, which emphasize a deceptive interpersonal approach, misanthropic ethics and strong self-centeredness (Jones & Paulhus, 2009: 2011). According to Christie and Geis (1970) people with high Machiavellian orientations lack skills in interpersonal relationships, manipulate other people like objects for their own purposes, lack a concern with conventional morality, and view people as being weak and cowardly.

The practicality of Mach studies has been well noted. Dahling, Whitaker and Levy (2008) acknowledge that it is the construct is related to a number of important organizational criteria. Specifically, Mach can be useful to predict "leadership behaviors, a variety of counterproductive work behaviors, defection, job satisfaction, occupational choice, and helping behavior" (p. 7). Moreover, we they point to potential future areas for the Mach instrument, including in politics, ethics, and trust. Rauthmann (2012) states that there is a growing body of research regarding Machiavellianism, such as in management, and sociology and applied psychology.

Machiavellian studies have been conducted on many populations across the world, yet there is a lack of literature on the population in Ecuador. These types of studies have been known to help management better understand their workforce, enabling for better training, recruitment and retention policies. Ecuador has a growing number of Millennials entering the workforce. In fact, as of 2018 an estimated 24% of the population of Ecuador was a Millennial (INEC, 2010). Millennial have been seen as people born between 1982 and 2000 (CEMDES, 2015). Management are faced with having to integrate an increasing number of Millennials into the workplace where they are seen as being distinct from Generation X, causing workplace conflicts (Bencsik, Juhasz & Horvath-Csiko, 2016).

This study aims to set a foundation to Machiavellian type studies in Ecuador, starting with Millennials that are soon to enter the workforce. The study aims to offer a base level of Machiavellian scores of university students from Guayaquil. In addition, gender differences and personality traits have appeared to be conflicting in past Machiavellian studies, showing difference amongst some populations and no differences amongst others (Corzine, 1997). Additionally, socio-economic level seems to play a role on Machiavellian scores Turner and Martinez (1977). Socio-economic level was also tested in this study. The instrument used was an online version of the Mach IV survey constructed and validated by Christie and Geis (1970).

The study set out to test two hypotheses. Tusev (2019) pointed out significant differences between male and female university students from across Ecuador in a

number of areas including workplace preferences and life goals. These were generally based along agentic and communal traits, with females following communal traits and males' agentic ones, which are supported by many researchers (e.g. Abele, 2003; Trapnell & Paulhus, 2012; Eagly & Wood, 2016). Hence as Machiavellianism is more in line with agentic traits it is hypothesized that male Ecuadorian university students will demonstrate higher Mach scores than females. Additionally, Tusev (2019) also demonstrated significant differences in workplace preferences and life goals between higher socio-economic students and lower socio-economic students. Piff et al. (2011) indicated that lower socio-economic groups tend to think of others more, while high socio-economic groups tend to be more self-centered. Also, Graham (1996) predicted that the socio-economic level of respondents is associated with their Mach personality traits. In this study, it is expected that higher socio-economic level students will have a higher Mach score.

### Literature Review

Niccolo Machiavelli was born in Florence in 1469. He dedicated his life to analyze history and his work experience to sum up his pessimistic perspective of the individual human being. He wrote about his experience in politics, when he "advised political leaders how to acquire power, resist aggression and control subordinates" (Graham, 1996, p.67). His belief is exemplified in his renowned statement: "Men are in general ungrateful, fickle, false, cowardly, covetous, but as long as you succeed, they are yours entirely" (Graham, p.67). Machiavelli warns that when there is power at stake, morality and ethics are irrelevant to the case, thus lying, deceiving and manipulating is the best means to an end.

Machiavelli's work became the cradle to past and current Machiavellian personality studies, in which personality traits of a population are analyzed to understand the level of Machiavellianism in a society, according to Machiavelli's perspective of men. People with high Machiavellian orientations lack affect in interpersonal relationships, manipulate other people like objects for their purposes, lack concern with conventional morality, and view people as weak and cowardly (Christie & Geis, 1970, p. 359). Machiavellianism has been described

as a dispositional tendency to manipulate and exploit others (Chabrol et al., 2009, p. 734).

According to Christie and Geis (1970), the "Machiavellian" is someone who views and manipulates other for his own purposes. Other researchers as Vleeming (1979) accept these concepts and complement it by stating that it denotes the personality dimension on which people can be ordered in terms of a more or less manipulative way of behavior in different interpersonal situations. Jones and Paulhus and Williams (2002) described high level Machiavellian types as people that are driven by intense selfishness and would likely obtain their goal in deceptive ways. Additionally, Machiavellianism has a negative correlation with the possession of emotional empathy and emotional identification, meaning that people with these characteristics will likely have trouble interacting with others and being part of a society. People can have different levels of Machiavellianism; such levels depend on a number of established factors. In another study, Jones and Paulhus (2011) found that Machiavellianism was positively correlated with psychopathy and narcissism (p. 680).

### Machiavellianism and Business

Machiavellian tactics tend to favor success in the business world. Graham (1996) compares the characteristics of *Low Mach's and High Mach's*: "The High [Mach] pursues the task goal of maximizing his gain, while the Low [Mach] is more interested in the process, and before he knows it, he finds himself maneuvered into a position, often a worse one" (p. 69). Additionally, Vleeming (1979) revised 34 articles and found that in accordance with the ideas postulated by Christie and Geis (1970), generally "High Mach's manipulate more, win more, are persuaded less, persuade others more, and otherwise differ significantly from low Mach's as predicted" (p. 308). Machiavelli's highly competitive perspective of business lacks trustworthiness and therefore all players should be ready to manipulate and deceive to control their opponents, whom he describes as having done well under old conditions. Imposing a change requires high Mach tactics. Machiavelli warns that

"... there is nothing more difficult to take in hand, more perilous to conduct, or more

uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and only lukewarm defenders in those who may do well under the new" (Machiavelli, 1993).

#### Machiavellianism and Political Ability

Graham (1996) measured the political ability and need for power in Machiavellian personalities of project managers, assuming there is a strong correlation between success and high-level managing. Results were not conclusive since the author couldn't find a statically significant level of correlation between the variables. Nonetheless, he successfully predicted that the socio-economic level of respondents is associated with their Mach personality traits. Also, Geis and Moon (1981) linked Machiavellianism and deception as a trend in politics.

#### Machiavellianism and Juvenile Delinquency and drug abuse

In another study, Chabrol (2009) proposed to study the Dark Tetrad (composed of four parts: narcissism, Machiavellianism, psychopathy, and sadism) personality traits in correlation with juvenile delinquency. The research summed up useful scales, all proven to be successful. Within the study lay the Mach-IV inventory. The population of high school students in Toulouse, France was analyzed by the author. Their personalities were tested among other variables such as socio-economic level, drug abuse, and delinquent behaviors. The results showed that there is a high tendency of portrayal of these personalities in male adolescents. College-level students have a lower tendency to carry the Dark Tetrad than high schoolers. The sadistic personality is the only one associated with juvenile delinquency. There was no independency between the other personalities and delinquency. Respondents presenting a drug abuse history presented risk factors for delinquency, therefore were more likely to engage in antisocial activities.

Kaestner et al. (1977) aimed to test the reliability and validity of the Mach-IV test by applying the survey to drug abusers to see if the results differed from those of a normal population. The sample of the research

was composed of 35 male residents in the New York State Drug Abuse Control Commission. In the study, the Machiavellianism scale was administered to the sample, and through retesting they found that the Mach-IV test is reliable on this population, since the means and the standard deviations were all within the range of the values that can be found in non-abusing samples and the responses of the tested individuals were constant over time. They also used their measurement of Machiavellianism to attempt to evaluate the manipulative abilities of the drug abusers, though, no conclusive statements were obtained.

#### Machiavellianism, Self-disclosure and same-sex friendship dyads

Brewer, Abell and Lyons (2014) studied the influence of Machiavellianism and competition on self-disclosure within same-sex friendship dyads. The study was performed on a sample of 236 individuals, gathered from the campus of a British University, an online University participant pool, and a psychology research website, all via opportunity or convenience sampling (samples that were close and conveniently available to the researcher). This research used the Mach-IV test as the tool for measuring Machiavellianism, while other tests were used to define the self-disclosure scale of the participants, along with an amended interpersonal competition index. The results for Machiavellianism were helpful to determine the level of self-disclosure in the participants, but not for the positivity of the disclosed information. The study also found differences in behavior between men and women, based on their level of Machiavellianism.

#### Machiavellianism and Emotional Maturity

Shamsudheen, Bishmi and Appu (2017) investigated the effect of self-control in emotional maturity and Machiavellianism. The research was conducted on office workers aged 25 to 55, consisting of 38 females and 30 males, for a total of 68 individuals, selected by convenient sampling. To do this, the Mach-IV scale was used, as well as a scale for emotional maturity and a very brief self-control scale. The authors' concept of this research was based on the idea that an emotionally mature person can feel their emotions, but not necessarily has to become them; while the concept of self-control involves inhibiting automatic

impulses or an effortful activation of a behavior. The article concluded that there is no significant difference in emotional maturity Machiavellianism and self-control on an individual, but they stated that there is a negative correlation between self-control and Machiavellianism, and a positive one between emotional maturity and Machiavellianism.

#### Machiavellianism, Gender and the Workplace

Turner and Martinez (1977) studied a population of 1482 people aged 21 and over, from across the continental United States. The study used the following variables: occupational status, income, Machiavellianism, education, race, and age. Other tools used to analyze the results and control variables were the Touhey's strategy and IQ tests. After discussing the data, they concluded that men with above-average higher education level, level of occupational and larger incomes are associated with the higher Machiavellian traits. On the other hand, men with below-average education are considered to be inversely related to Machiavellianism and occupational attainment, and unrelated to income attainment. By gender, woman's Machiavellianism had a substantial facilitative effect upon women's occupational attainment.

#### The Mach-IV Test

Since its publication, the Mach-IV test has become a widely-used tool for measuring Machiavellianism. Its brevity combined with its split-half reliability coefficient of .79 as reported by Christie and Geis (1970, p. 16) has made the Mach IV desirable for both survey and experimental research. A big amount of academic articles have used this tool to evaluate several other aspects of an individual's personality against Machiavellianism. In other words, many researchers consider the results of this test as a reliable view of the level of Machiavellianism in individuals, and use it as a standard for measuring other factors. In research, it is of utmost importance to have a standard against which different factors can be measured, so having a reliable source of measurement for a personality trait becomes vital when analyzing other personality elements or situations.

This test has been validated several times in several studies, in terms of its reliability. "Generally, the MACH

IV/IV is deemed a reliable and valid scale" (Rauthmann, 2012, p. 346)). As it is meant to define a person's tendency to act in a Machiavellian way, some authors have conducted retests to their test samples to see if their responses changed overtime. Miller, Smart, and Rechner (2015) found the Mach test provides a very reliable measurement of this distinct personality trait. "There are issues raised about the Mach IV instrument in reliability, but the overall Mach IV has been useful in studies related to leadership, theft, job satisfaction, helping behaviors, and occupational choice. The measure is particularly relevant for organisations" (p. 122).

The Mach-IV inventory consists of twenty items, ten referring to high Machiavellianism and 10 indicating low Machiavellianism. Items are rated on a five-point basis. Responses are provided in a Likert scale, ranging from 'strongly disagree' to 'strongly agree'. The total scores range from 20 to 100. Some studies use the total score as an acceptable internal consistency with a ranging from 0.69 to 0.79 (i.e., Jakobwitz & Egan, 2006; Paulhus & Williams, 2002). Nonetheless, the lack of internal consistency does not strongly suggest that the study is unreliable. It could happen that the sample size needs more respondents to be statistically representative. The test deals with cold, misanthropic, cynical, pragmatic, and immoral beliefs; lack of affect and empathy; strategic long-term planning; agentic motives (e.g., power, money, etc.) and self-beneficial goal pursuit; and manipulation, exploitation, duplicity, and anti-social tendencies (Rauthmann, 2012, p. 345).

Aziz and Vallejo (2007) replicated Christie and Geis' study with some modifications. He analyzed sales managers by providing a Machiavellian behavior (Mach-B) scale, which differs from the common Machiavellian IV inventory (Christie and Geis, 1970). This Mach-B scale is focused on items exemplifying Machiavellian settings in which respondents add their opinion towards the case. The Mach-IV inventory is a more reliable tool than the Mach-B scale since it provides twenty already accepted Machiavellian items with Likert scale responses. This score represents an accurate description of the Machiavellian personality traits of a population.

There are limitations to the results in the Mach IV test. According to Burns, Tackett, and Wolf (2015) research suggests that individuals' predictions of their behavior, including the morality of their actions, are likely to differ from the choices they actually make. Also, the Mach-IV is scored as a one-dimensional scale (Dahling, Whitaker, & Levy, 2008).

### METHODOLOGY

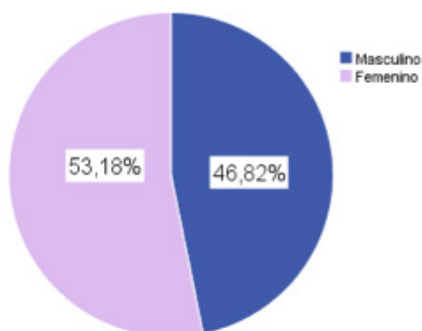
This study aimed to analyze the Machiavellian personality traits of university students from Guayaquil. Additionally, the study looked at the effect of the factors of gender and socio-economic level on Mach scores.

Based on the Mach-IV inventory proposed by Christie and Geis (1970) 20 close-ended statements were presented to university students from Guayaquil. 10 statements were aimed to portray Low Machiavellian traits and the other 10 were indicative of High Machiavellian traits; these were randomly ordered for students. All the Machiavellian statements were formulated in a five-point Likert Scale. The Machiavellianism scale was scored from 20 to 100. People who scored above 60 were considered 'high Mach's' and those scoring below 60, 'low Mach's'. In addition to the Mach-IV statements, the survey included demographic information including gender, age, university attending and subjective socio-economic level (see Appendix 1). For socio-economic level, students were asked to slide a bar from 0 to 100, 0 representing the lowest level and 100 the highest. This method for obtaining subjective socio-economic level was found to be valid for university students in Ecuador in Tusev (2019).

The Mach IV was back translated by a professional translator from English to Spanish. The translator is a native Ecuadorian, allowing for the local Ecuadorian Spanish norms. The final version was reached in accordance with 18 selected students' responses pointing out any word or expression they did not understand (see Appendix 1). Furthermore, an initial testing of the 20 items revealed a Cronbach's Alpha score of .744, an acceptable level of reliability as stated by Mohsen and Reg (2011).

The sample population was made up of 440 university attending students from the province of Guayas, and born between 1980 and 2000. There is an estimated 135,000 students enrolled in higher education in the province of Guayas (SENESCYT, 2015). The sample size to be researched was set at 95 per cent confidence level with a 5 per cent margin error. Therefore, the minimal sample size for this study was 384 students, in order to be statistically significant. The randomized survey achieved 519 responses, exceeding the estimated sample size for the study. However, after filtering the raw data for invalid responses and samples of non-university students, the final sample size was 440. A large number of students was from UEES, a prominent university in Guayaquil, often associated with the higher socio-economic segment of the populations. Although the respondents may not be regarded as typical of Guayas students they serve for a basis for future comparisons.

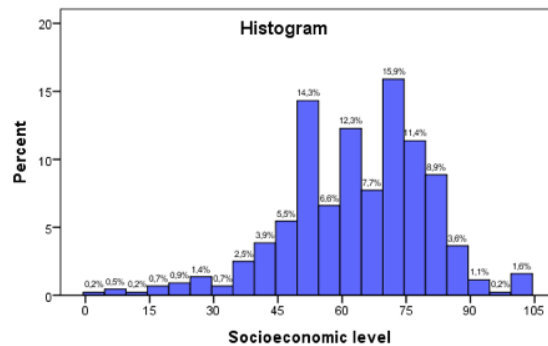
Figure 1 shows the gender distribution of respondents. Out of the 440 surveyed, women represented the majority with 53, 18 % and men represented 46, 82 %.



**Figure 1.** Gender distribution of surveyed people

Figure 2 and Table 1 show the distribution of the subjective socio-economic level of surveyed people. The sample is unimodal and slightly skewed to the right.

The mean socio-economic level stated was 62, 63 over 100. This indicates an average consistent with medium-high socio-economic status in accordance with results found by Tusev (2019).



**Figure 2.** Socioeconomic level distribution of surveyed people

**Table 1.** Socioeconomic Level's Statistics of Surveyed People

<b>Statistics</b>	
<b>Socioeconomic level</b>	
Mean	62,63
Median	65,00
Mode	70

The Mach-IV test was distributed electronically using a snowball effect. Initially the link to the survey was sent to students from a number of universities in Guayaquil, and they were asked to pass on the link to their student colleagues. Additionally, some surveys were distributed in classrooms by the teacher by way of posting the link on the board and asking students to access the survey on their electronic devices. The average time taken to complete the survey was 5 minutes.

The analysis of results looked at the three variables stated: Mach score, gender and socio-economic level. In the case of socio-economic level and gender, the analysis included the descriptive statistics for both variables. The analysis of results was completed using IBM SPSS and included two sections: the descriptive statistics and the inferential statistics. The descriptive statistics for the variables includes tables, pie charts

and histograms. In order to test the first hypothesis, an independent sample test was performed in order to identify if there is a difference between the mean Mach score of men and women. Following the second hypothesis, a correlational study was performed between socio-economic level and the Mach score. A Pearson-correlation test was performed. The results were presented in tables and a scatterplot for the two variables of interest.

A limitation of the study is the sample population reached. A larger representative population was seen as an issue from the outset. In accordance, that limitation was minimized by employing a wider net of contacts from various universities across the city. However, the sample favors one university, with 68 % of responses coming from that one university. Moreover, the distribution of the socio-economic

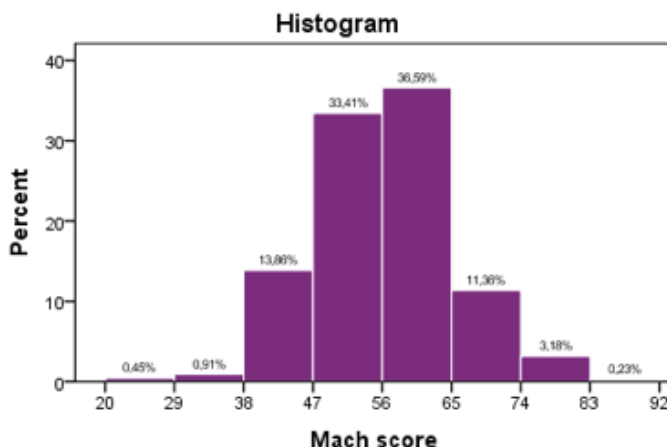
level from the surveyed people was skewed to the right, which indicates an overrepresentation of higher socioeconomic students. Future studies may attempt to include a wider range of socio-economic level students and revise the results on that variable.

**RESULTS**

Table 2 describes the frequencies of the Mach score of surveyed people; along with Figure 3. The majority of people scored as low Mach's (54.5%). The mean Mach score for the surveyed Millennials was 55, 68 (a low Mach) and the central tendency, median, and mode was 56.

**Table 2.** Mach Score in Intervals.

		<b>Mach score (Binned)</b>		
		Frequency	Percent	Cumulative Percent
Valid	<= 29	2	,5	,5
	30 - 38	6	1,4	1,8
	39 - 47	74	16,8	18,6
	48 - 56	158	35,9	54,5
	57 - 65	145	33,0	87,5
	66 - 74	42	9,5	97,0
	75 - 83	12	2,7	99,8
	84 - 92	1	,2	100,0
	Total	440	100,0	



**Figure 3.** Mach score's distribution of surveyed people

Figure 4 shows the Mach scores by gender. It appears that there is no significant difference in Mach score by

gender. This nullifies the hypothesis established in the introduction.



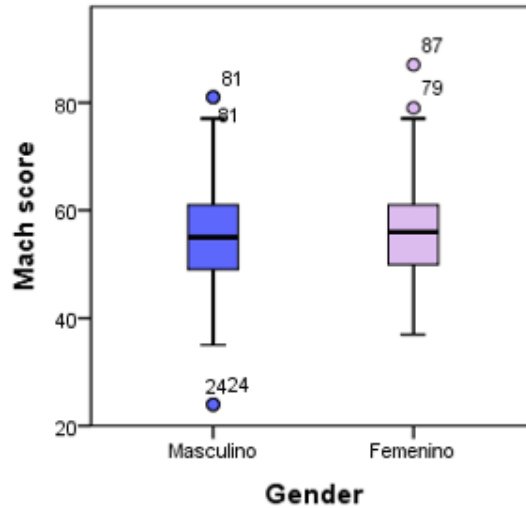


Figura 4. Mach score by gender

According to the Levene's test, equal variances are assumed between men and women. As a consequence,

the p-value (0.165) fails to reject the null hypothesis, so there is no significant difference in the mean Mach score between men and women (Table 3).

Table 3. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Mach score	Equal variances assumed	.495	.482	-1,392	438	.165	-1,196	,859
	Equal variances not assumed			-1,388	424,594	.165	-1,196	,862

Figure 5 shows no pattern between socio-economic level and Mach score. The Pearson correlation coefficient was -0.006, and was not significant. Therefore, there

is no clear trend between the variables. In addition, the coefficient of determination was almost zero ( $3.884 \times 10^{-5}$ ) and reinforces the Pearson coefficient of no correlation.

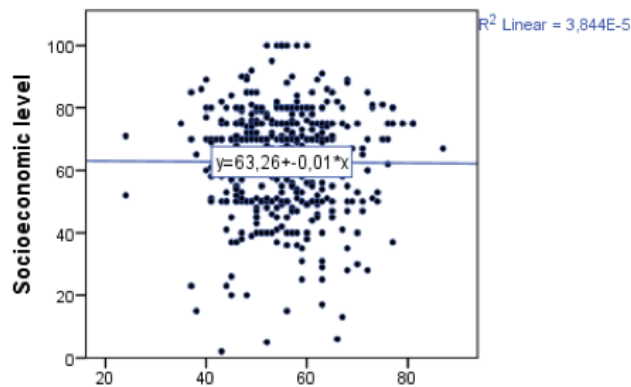


Figura 5. Socioeconomic level and Mach score

## DISCUSSION

The results were surprising as both hypothesis were rejected. There appears to be no significant difference in Mach scores in this population and gender. As a younger cohort, Millennials are yet not well understood, especially in Ecuador. Very few studies have been focused on this cohort, compared to the large quantity of data being gathered in other parts of the world. Tusev (2019) found significant differences in between male and female university students from Ecuador. For example, females had a higher preference than males for a workplace with a friendly atmosphere, and good social responsibility. And males had a higher life goal preference for being wealthy. However, given the limited data available on Ecuadorian Millennials and personality differences there is little to go on to explain the results here. On the other hand, studies in other parts of the world reveal that the results are not unique in Ecuador. For example, Szijarto and Bereczkei (2014) found that male students had a higher Mach score than females. Additionally, Starr (1975) found no significant difference amongst male and female university students and Mach score amongst Arabs, yet there was a significantly lower Mach score for US female students compared to male students. On the other hand, Corzine (1997) stated that results relative to Mach scores and sex reported are inconsistent, with some researchers reporting higher Mach scores for men and others reporting no significant differences between men and women.

With relation to the rejection of the second hypothesis between a correlation with Mach score and socio-economic level, the results are surprising. The results in Tusev (2019) show significant differences in workplace preferences, life goals and general personality between university students from higher socio-economic level and those from lower socio-economic levels. For instance, higher socio-economic students had a higher starting salary expectation; they were less formal with their superiors; they had higher life goal preferences for religion/spirituality, marriage and having children and being wealthy. However, these are not comparable personality traits to the Mach scores tested in this study. Again, due to a lack of comparative research the results here cannot be analyzed in any depth. In addition, the sample was skewed to a higher socio-economic population which may have impacted the

results. Future research should be conducted to test if a greater representative sample by socio-economic level will challenge the results here. It is known that socio-economic level has impacted Mach scores in other populations (Graham, 1996).

Regarding the average low Mach score of the population overall, there is some interpretation that may be relevant for managers of this generational cohort. A low Mach score indicates that greater control of emotions in stressful situations (Szijarto & Bereczkei, 2014). "Correlation analysis showed a positive and significant correlation between the level of Machiavellianism and Neuroticism ( $r=0.28$ ;  $p<0.05$ )" (p. 369).

The results in this and subsequent studies in Ecuador can be used for cross cultural studies. It is known that Mach scores vary across cultures, as well as professional cohorts. For instance, Corzine (1997) conducted a review of single-nation and cross-national studies, and identified that Indian men as well as Indian lawyers, executives, and physicians had a very high Mach IV score. Iranians were low scorers, and Algerians were very close to Iranians (p. 299-230). To give some indication of high mean Mach scores, Hong Kong ( $M=89.5$ ) managers and managers in the People's Republic of China ( $M=86.1$ ) scored higher than US managers ( $M=83.9$ ) (Corzine).

## CONCLUSION

Based on the findings, the results show that the distribution of Mach score for the surveyed people was unimodal and symmetric, were the average score was 55.68 (a low Mach). The first analysis was a t-test for equality of means in order to test if women in the population tend to be more Machiavellian than men. The results revealed that there is not significant statistical evidence to prove that there is a difference between mean Mach score for women and men. Based on the inferential statistical analysis there is no evidence to support a correlation between socio-economic level and Mach score. The relationship is null. Therefore, the second hypothesis was also rejected. For further research, it would be appropriate to expand the number of respondents and diversify the universities of the cities studied. Additionally, a multi scale study would bring greater value to knowing this cohort. For example,

a Mach test combined with the Big Five Inventory (BFI) test measuring if there is a correlation between Machiavellianism and the five main Big Five factors would bring a greater insight into this cohort and their personality.

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