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Original

Measurement of the Jungian Psychological Types in Mexican university students

Medición de los tipos psicológicos junguianos en estudiantes universitarios mexicanos

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Abstract

The aim of this study was to measure the eight Psychological Types proposed by Carl G. Jung in Mexican population. A cross-sectional, multicenter, exploratory study was carried out, for which a psychometric instrument based on Jungian typology theory was developed. The Psychological Type Indicator (ITP, for its acronym in Spanish) consisted of 8 subscales (one per psychological type). It was administered to a sample of 1194 participants and validated by the methodological and statistical procedure developed by Reyes Lagunes and García y Barragán. The participants were Mexican university students, ranging from 17 to 40 years (median = 21, IQR = 4; 63% female). The internal consistency of the instrument was determined, obtaining an alpha coefficient of 0.873. An exploratory factor analysis indicated a structure of 10 factors, which together explained 32.672% of the variance. Four of the found factors were consistent with Jungian typology (Introverted Feeling, Introverted Thinking, Extraverted Sensing and Extraverted Feeling). The rest of the factors grouped attributes of this theory, which enable a new way of assessing personality in Mexican population with reference on this model of personality.

Keywords: Psychological types; Personality; Validation; Scale development; Assessment

Resumen

El objetivo de este estudio fue medir los 8 tipos psicológicos propuestos por Carl G. Jung en población mexicana. Se llevó a cabo un estudio transversal, multicéntrico y exploratorio, en el cual se desarrolló un instrumento basado en la tipología junguiana. El Indicador de Tipos Psicológicos (ITP) se conformó por 8 subescalas (una por tipo psicológico). El instrumento fue administrado a una muestra de 1,194 estudiantes universitarios mexicanos provenientes de 3 estados distintos de la República Mexicana (Guanajuato, Jalisco y la Ciudad de México), y se validó por medio de la propuesta metodológico-estadística de Reyes Lagunes y García y Barragán. Los participantes fueron hombres y mujeres (37 y 63%, respectivamente) de entre 17 y 40 años de edad (mediana = 21, RIC = 4). Se determinó la consistencia interna del instrumento, obteniéndose un coeficiente alfa de 0.873. El análisis factorial exploratorio arrojó una estructura factorial compuesta por 10 factores, que en conjunto explicó el 32.672% de la varianza. De los

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10 factores encontrados, 4 fueron consistentes con la tipología junguiana (sentimiento introvertido, pensamiento introvertido, sensación extravertida y sentimiento extravertido). El resto de los factores agruparon atributos de la teoría junguiana, los cuales permiten una nueva forma de evaluar la personalidad en México de forma válida y confiable, con referencia a este modelo de personalidad.

Palabras clave: Tipos psicológicos; Personalidad; Validación; Desarrollo de escala; Evaluación

Introduction

The Psychological Types model proposed by Carl G. Jung in the 1920s posits the existence of eight characteristic types of a persistent general attitude, understanding as "attitude" the disposition of the mind for acting in a certain form and direction, in a predetermined way (Jung, 1995 [1921]). The theory assumes the existence of innate preferences for gaining energy, gathering information, taking decisions and, in general, orienting oneself toward the world (Tucker, 2010). Additionally, this theoretical approach tries to understand the point of view from which the individual experiences the unconscious (Beebe, 2004). Thus, Jung suggests two fundamental attitudes: introversion and extraversion, which are originated by the concepts of "object" and "subject". Jung defines the "object" and the "objective" as everything that belongs to the real, external and tangible world; on the other hand, the "subject" and the "subjective" represents conceptions that corresponds fundamentally to the person's psyche (Jung, 1995 [1921]). According to the theory, four functions emerge: Thinking, Feeling, Sensing and Intuition. The functions involve the way the individual relates to the immediate surrounding, and how information is extracted from the environment (Robertson, 2006). If each attitude is combined with a different function, eight psychological types will be obtained (Fig. 1).

Since its creation, this theory has been embraced by a large number of professionals of different areas of psychology. It has proven being fruitful in the therapeutic context, and clinically useful for providing a framework to understand individual differences in behavior (Osmond, Siegler, & Smoke, 1977). However, an increasing number of psychology professionals have questioned this theory in the past decades, as its empirical support has not been fully demonstrated (Loomis, 1982). This Jungian personality model has been difficult to operationalize and to empirically demonstrate (Davis & Mattoon, 2006). According to some authors, Jung himself found difficult "typifying" his patients, coming to believe that his typology could have been just a wordplay (Osmond et al., 1977). Other difficulties revolves around accurately understanding the introverted attitude from an objective perspective, since it depends strongly of archetypes and mental images that cannot be easily communicated (McCrae & Costa-Jr, 1989). Likewise, the descriptions given by Jung about each type make strong reference to the unconsciousness, propitiating that attitudes and functions overlap with each other (McCrae & Costa-Jr, 1989). A study conducted by Cook (1970) indicated the only genuine bipolarity in this typology was extraversion/introversion. Moreover, Gray (1947) also pointed a temporal instability in the theory, finding that, in a lapse of 5 years, people tends to use more sensation and thinking than in their youth, and also develop a more introverted attitude.

In spite of these difficulties, psychometric instruments that measure Jungian typology have been developed. The Myers-Briggs Type Indicator (MBTI) is the most widely used test based in this theory (Matoon & Davis, 1995). It measures 16 Psychological Types instead of eight, since two additional dimensions that were added by Katherine Briggs and Isabel Briggs-Myers to Jung's original model: "Judging" and "Perceiving". Judging focuses in a preferred lifestyle in the sense of order, meanwhile Perceiving indicates a preference for a less structured approach to life (Arnau, Green, Rosen, Gleaves, & Melancon, 2003). This 16-type structure was later used in several subsequent Jungian typology instruments. Despite its extensive use and its influence on other test, the MBTI has been target of numerous controversies. The authors of the test, Katherine Briggs and Isabel Briggs-Myers were outsiders from the scientific community, thus, their incursion into the field of personality assessment has been questioned by theorists and researchers (Cranton & Knoop, 1995). Furthermore, the instrument is not isomorphic with the theory on which it is based, since it measures 16 types and not eight. Therefore, using the

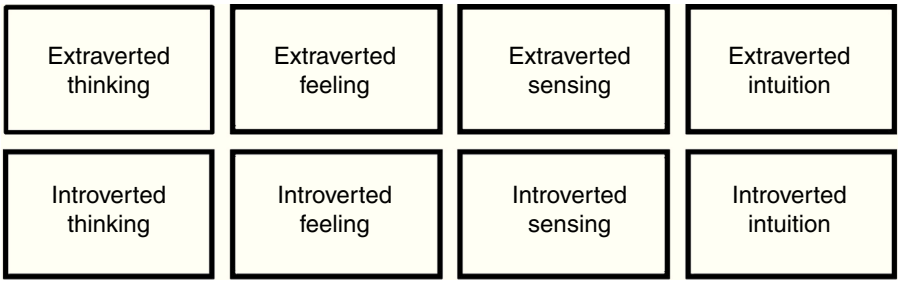


Fig. 1. Original model of the 8 psychological types proposed by Carl G. Jung.

MBTI to measure Jungian typology must be considered with caution (McCrae & Costa-Jr, 1989).

Referring to the psychometric aspects of the MBTI, some studies have evidenced the low test-retest reliability, showing that, even when the interval between applications is short (5 weeks), about 50% of respondents will fall into a different MBTI type (Pittenger, 1993). In addition, it is called into question the relevance of reducing each type in a dichotomous scales, since Jung acknowledges the existence of intermediate positions between attitudes and functions, whereas in the MBTI these are mutually exclusive (McCrae & Costa-Jr, 1989). Studies conducted have questioned the bipolarity of the theory, claiming that the functions should be measured independently instead of a forced-response format (Loomis, 1982). Myers and McCaulley, (cited by Vacha-Haase & Thompson, 2002) suggest that the MBTI scores were designed to show the direction of the preference, not its intensity. Other authors consider the forced-response format as a "statistical artifact that will inherently yield spurious negative correlations between the answers to the items" (Girelli & Stake, 1993).

A way to obtain evidence for the validity of a psychometric instrument and the theory on which it is based is by a factor analysis that reflects its underlying constructs (Morales Vallejo, 2013). Factor analysis of previous inventories designed to measure Jung's typology, failed in evidencing that the tests measured what it intended to measure (Loomis, 1982). Without this evidence, no psychometric instrument that purports measuring this theory will have the necessary empirical basis required for experimental research or clinical application. In Mexico, no studies that intend to measure Jungian typology have been developed. Even though there is a Spanish translated version of the MBTI, it is not adapted nor validated specifically for Mexican population, hence, it lacks of semantic and cultural relevance (García y Barragán, García Campos, & Reyes Lagunes, 2017). The Ethical Code of the Psychologist states explicitly the psychologist's obligation of using culturally relevant assessment techniques in its 18th article (Sociedad Mexicana de Psicología, 2010).

Given the above, the following research question was formulated: Does the eight original Psychological Types proposed by Carl G. Jung exist in Mexican population? Measuring the typology in this specific context will allow to obtain evidence of its validity for the first time in this country. The findings by this study could serve as a guideline for the mental health professional when choosing an assessment method. It is necessary to have methods of psychological assessment that are supported by solid scientific evidence, and, in addition, that are semantically and culturally relevant to the particular geographical context in which they will be applied (García y Barragán et al., 2017). In addition, the test resulting from this study can serve as an alternative to the MBTI, since its use without certification or its modification might result in a conflict with the MBTI publishers.

Method

Participants

The sample consisted of 1194 Mexican University students from three different schools, each one located in different cities of the country. Four hundred and forty five men (37.3%) and 749 women (62.7%) participated. The age range was between 17 and 40 years old (median = 20, IQR = 4). According to the declared sexual orientation, 1086 participants indicated being heterosexual (men = 87.4%, women = 93%), 39 homosexual (men = 5.6%, women = 1.8%) and 41 bisexual (men = 3.3%, women = 3.4%); 28 participants did not indicate their sexual orientation (men = 3.5%, women = 1.6%). The students belonged to 40 different academic programs, both undergraduate and graduate. About half of the sample (52.1%) corresponded to academic programs from the health sciences area, from which the 25% were psychology students.

Table 1
ITP subscales.

Subscale	Items
Extraverted Thinking	11 – 12 – 15 – 28 – 38 – 55 – 58 – 75 – 83 – 87 – 89 – 91
Introverted Thinking	1 – 6 – 13 – 16 – 24 – 37 – 40 – 65 – 69 – 79 – 82 – 90
Extraverted Feeling	14 – 30 – 45 – 51 – 57 – 59 – 61 – 80 – 84 – 86 – 92 – 93
Introverted Feeling	2 – 4 – 19 – 22 – 33 – 43 – 47 – 50 – 52 – 66 – 70 – 72
Extraverted Sensing	25 – 27 – 44 – 46 – 54 – 56 – 60 – 68 – 77 – 81 – 85 – 95
Introverted Sensing	3 – 5 – 10 – 21 – 31 – 49 – 63 – 71 – 73 – 88 – 94 – 96
Extraverted Intuition	8 – 17 – 23 – 26 – 32 – 35 – 36 – 39 – 41 – 53 – 62 – 67
Introverted Intuition	7 – 9 – 18 – 20 – 29 – 34 – 42 – 48 – 64 – 74 – 76 – 78

Note: Subscales that originally conformed the first version of the ITP along with the item numbers that conformed each subscale.

Instrument

The Psychological Type Indicator (ITP) consisted of eight sub-scales (one per psychological type), each one composed by 12 items, giving a total of 96 items (Table 1). Its reliability was calculated by a previous pilot study, where an alpha coefficient of 0.909 was obtained. Each item corresponded to a statement that reflected a specific characteristic of a type. The participant indicated the level of agreement or disagreement with the statement through a Likert scale, where 1 represented total disagreement and 5 indicated a total agreement.

Procedure

This was a cross-sectional, multicentric and exploratory study, since this was the first approach from the typology toward Mexican Population. The first step was the development of a set of 172 items that were later evaluated by 5 judges. Only the items in which all judges manifested agreement remained in the test, remaining a total of 114 items. The pilot test was administered to a sample of 163 university students, and with these results, a preliminary validation of the test was implemented to make the necessary corrections, and then obtaining the final version of the instrument. The test was administered in person in three different Mexican universities. In order to guarantee the confidentiality of the data, any personal information was omitted, and instead, a different identification number was added to each test. Special emphasis was made on the voluntary nature of the student's participation, and in the absence of negative consequences if the student refused to participate. The research protocol was revised and approved by the Research Committee of the University of Guanajuato.

Results

For the validation of the instrument, the methodological proposal by Reyes Lagunes and García y Barragán (2008) was implemented. A frequency analysis was made to verify that every response option in each item was scored; on the contrary, it should be eliminated. In the case of the ITP, it was not necessary to eliminate any item in this step, since all of the choice options resulted attractive for the participants. A *t*-test for independent samples was then carried out to ensure that every item was able to discriminate between low and high scores. According to this step, 9 items were eliminated for not evidencing such discrimination. Reliability was analyzed through Cronbach's Alpha, obtaining a coefficient of 0.873 for the whole scale, which reflects good internal consistency. A Pearson's correlation was implemented to determine the type of rotation to use in the incoming exploratory factor analysis. Correlations were low, thus, an exploratory factor analysis with orthogonal rotation was carried out. A structure composed by 10 factors (Table 2) was obtained, which collectively explained the 32.672% of variance. Four of those 10 factors were congruent with Jung's Typology: Introverted Feeling, Introverted Thinking, Extraverted Feeling and Extraverted Sensing (Table 3).

The remaining factors found in this study grouped, mostly, items belonging to the same attitude (introverted/extraverted) without recognizing between functions; which coincides with Cook's findings (1970), since he concluded that only this bipolarity seems to be genuine. Cronbach's alpha for the resulting factor structure, which finally was composed of 40 items, resulted in 0.808 coefficient, indicating again good internal consistency. The factors lacking of theoretical congruence were re-evaluated qualitatively, this in order to determine the common measurement trait among items, and it was

Table 2
Final factor structure.

Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
43 I find it hard explaining my feelings to others	**.780**	.096	.060	.155	.097	.136	−.016	−.010	.056	.043
33 I can't find a way for expressing my feelings	**.747**	.071	.077	.114	.114	.095	−.065	.006	.128	.027
19 Is hard for me explaining my emotions with words	**.741**	.013	−.024	.067	.141	−.009	−.004	.016	.048	−.014
47 Is hard for opening myself to others	**.659**	.253	−.009	−.051	.074	.023	.012	.033	−.065	.011
52 I rather reserving my feelings	**.652**	.257	.034	.018	.044	.053	.033	.034	.008	−.056
69 I don't say what I think	**.544**	.157	.273	−.001	.074	.075	−.034	.153	.034	−.065
86 Sometimes I don't say what I really think	**.476**	.076	.316	.050	−.042	.187	.119	−.072	−.125	−.023
79 I think I'm a cold person	**.444**	.211	−.184	.035	.079	.121	−.173	−.019	.174	−.031
24 I like more being alone tan surrounded by people	.207	**.783**	−.071	.032	.047	.040	−.067	.014	.119	−.052
21 Being isolated satisfies me	.253	**.683**	.060	−.003	.062	.096	.002	−.035	.007	−.049
90 Being surrounded by others exhausts me	.112	**.612**	−.041	.111	.134	.125	−.027	−.044	.044	−.017
1 I rather working alone than in team	.064	**.525**	.131	.085	.026	.033	.029	−.100	.077	.041
93 People's criticisms affect me	.066	.057	**.690**	.090	.159	.200	−.002	−.085	−.022	−.075
84 I'm willing to say what others wants to hear in order to being accepted	.195	.018	**.586**	−.039	.092	.047	−.278	.001	.127	−.017
57 Feeling appreciated by others is important for me	−.107	−.026	**.582**	.084	−.048	.040	.124	.208	−.066	.027
92 I take care of others more than myself	.068	.007	**.534**	.119	.161	.082	−.014	−.002	−.077	.059
9 I'm very impulsive	.087	.057	.028	**.785**	.036	.008	−.010	.094	−.008	.001
42 I take decisions impulsively	.153	.021	.126	**.755**	.155	.071	−.060	.050	.024	.098
4 I explode when I have intense feelings	.024	.110	.098	**.525**	.010	.135	.109	.052	−.001	.112
3 I don't enjoy my routine	−.096	.034	−.027	−.010	**−.684**	−.018	−.040	−.038	.007	−.018
18 I can't adapt to my daily grind	.158	.128	.130	.125	**.650**	.114	−.110	−.045	.150	−.018
40 I feel like an outsider in this world	.210	.360	.039	.016	**.464**	.181	−.002	−.046	−.098	.061
31 I'm an unstable person	−.130	−.129	−.111	−.245	**−.427**	−.075	.111	.100	.140	.004
16 I find it hard adapting to my surroundings	.311	.235	.100	.083	**.409**	.048	.010	−.041	−.001	−.175
94 I usually get lost into details	.105	.126	.210	.026	.073	**.667**	.009	.080	−.084	.044
95 Sometimes, insignificant details distract me from what I do	.122	.063	.134	.087	.105	**.646**	.093	.089	−.103	.065
81 Is hard for me to listen other's advices	.202	.025	.047	.181	.120	**.472**	−.052	−.123	.215	−.111
34 People say I have my head in the clouds	.167	.099	.094	.301	.191	**.419**	−.084	−.002	−.059	.109
54 I like the feeling of being outside	−.030	.001	−.136	−.019	−.001	.091	**.661**	.115	−.081	.116
55 I take decisions according to my current circumstances	.046	−.045	.067	.076	.071	.017	**.568**	.169	.004	.026
46 Actions are more important than words	−.013	−.026	.110	.032	−.116	−.184	**.434**	.315	.006	.204
38 Is better knowing a Little of everything than a lot of only one thing	.052	−.068	.072	.049	−.007	.007	.125	**.650**	.072	−.096
60 I need experimenting things in order to understand them	.066	.033	.063	.114	.018	.204	.021	**.636**	.070	.253
96 I think experience is the best way for gaining knowledge	.016	−.013	−.045	.057	−.055	.013	.198	**.620**	−.044	.124
25 I give importance only to what is concrete and real	−.007	.110	−.071	−.073	−.047	−.044	.041	.156	**.708**	.017
44 I consider important only what is tangible	.151	.052	.079	.090	.042	−.040	−.071	−.004	**.699**	.081
64 I think everything can be rationally understand	.066	.001	.156	.089	−.126	.070	.212	.189	**−.415**	.064
62 I feel more attracted to new than conventional ideas	.009	−.097	.045	.023	.015	.027	.059	.231	.047	**.676**
67 I like taking risks	−.081	−.068	−.116	.125	.027	.016	.039	.051	−.021	**.561**
48 I dislike jobs that limit my creativity	.024	.088	.010	.017	−.086	.078	.282	−.064	.044	**.552**
Cronbach's Alpha	.831	.707	.608	.667	.171	.622	.540	.540	.064	.433
Mean	22.20	10.70	10.85	8.75	13.89	11.03	12.42	11.40	9.24	10.24
Standard deviation	6.58	3.35	3.061	2.916	2.305	3.154	1.992	2.309	1.906	2.176

Note: F = factor. Factor loadings > .40 are on bold. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. The rotation converged in 41 iterations.

Table 3
Factors congruent with Jung's Typology.

Factor	Items that belong to the factor	Subscale for which the item was originally created
1	43 I find it hard explaining my feelings to others 33 I can't find a way for expressing my feelings 19 Is hard for me explaining my emotions with words 47 Is hard for opening myself to others 52 I rather reserving my feelings 69 I don't say what I think 86 Sometimes I don't say what I really think 79 I think I'm a cold person	Introverted Feeling
2	24 I like more being alone tan surrounded by people 21 Being isolated satisfies me 90 Being surrounded by others exhausts me 1 I rather working alone than in team	Introverted Thinking
3	93 People's criticisms affect me 84 I'm willing to say what others wants to hear in order to being accepted 57 Feeling appreciated by others is important for me 92 I take care of others more than myself	Extraverted Feeling
9	25 I give importance only to what is concrete and real 44 I consider important only what is tangible 64 I think everything can be rationally understand	Extraverted Sensing

Note: Factors that were congruent with the original Jung's typology after the exploratory factor analysis.

Table 4
Factor recoding.

Factor	Item	Subscale for which the item was created	Recoding
4	9 I'm very impulsive 42 I take decisions impulsively 4 I explode when I have intense feelings	Introverted Intuition Introverted Intuition Extraverted Feeling	Introverted Impulsivity
5	3 I don't enjoy my routine 18 I can't adapt to my daily grind 40 I feel like an outsider in this world 31 I'm an unstable person 16 I find it hard adapting to my surroundings	Extraverted Intuition Introverted Intuition Introverted Thinking Extraverted Intuition Introverted Thinking	Introverted Dereliction
6	94 I usually get lost into details 95 Sometimes, insignificant details distract me from what I do 81 Is hard for me to listen other's advices 34 People say I have my head in the clouds	Introverted Sensing Extraverted Sensing Extraverted Sensing Introverted Intuition	Introverted Precision
7	54 I like the feeling of being outside 55 I take decisions according to my current circumstances 46 Actions are more important than words	Extraverted Sensing Extraverted Thinking Extraverted Sensing	Extraverted Realism
8	38 Is better knowing a Little of everything than a lot of only one thing 60 I need experimenting things in order to understand them 96 I think experience is the best way for gaining knowledge	Extraverted Thinking Extraverted Sensing Introverted Sensing	Extraverted Practicity
10	62 I feel more attracted to new than conventional ideas 67 I like taking risks 48 I dislike jobs that limit my creativity	Extraverted Intuition Extraverted Intuition Introverted Intuition	Extraverted Audacity

Note: Factors that grouped items from different scales from which they were created for. These factors were individually assessed to determine the similarities within the items that they gathered for their posterior recoding.

subsequently recoded (Table 4). This represents a reinterpretation of the theory, resulting in a proposal to measure personality through attributes of Jungian typology.

Percentiles of the 10 factors were obtained (Table 5), this in order to determine the intensity of the preference of each type: Scores below the 20th percentile indicated a very low preference, below the 40th percentile indicated low preference, below the 60th indicated a medium preference, below the 80th percentile indicated a high preference, and from percentile 81 and above will be considered as a very high preference.

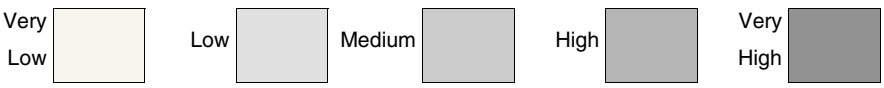
Jung posited that one of the types, the Introverted Sensing, is more common in women (Jung, 1995 [1921]), and later Robertson (2006) retook to this issue claiming that it is also highly prevalent in homosexual men. However, in the present study, it was found that only 32% of homosexual men show high or very high scores in this psychological type. In the case of women, 35.7% presented high or very high scores. In both cases, scores were distributed more or less homogeneously in all levels of preference (Table 6).

Discussion

Jungian typology has stimulated a considerable quantity of research, nevertheless, research focused on verifying the typology per se still insufficient. Studies that have evaluated the validity of various instruments in Jungian typology have shown similar results to this research, since the found factor structures have been only partially consistent with the theory (Arnau, Rosen, & Thompson, 2000; Davis & Mattoon, 2006; Johnson, Mauzey, Johnson, & Murphy, 2001; Loomis, 1982; Macdonald & Holland, 1993; Sipps, Alexander,

Table 5
Percentile scores.

Percentile	Intr Feel	Intr Thin	Extr Feel	Extr Sens	Intr Impu	Intr Dere	Intr Prec	Extr Real	Extr Prac	Extr Auda
1	8	4	4	3	9	4	4	5	5	4.87
5	11	6	6	4	10	6	9	7	6	7
10	13	6	7	5	11	7	10	8	7	8
15	15	7	8	6	12	8	11	9	7	8
20	17	8	8	6	12	8	11	10	8	9
25	18	8	9	7	12	9	11	10	8	9
30	18	9	9	7	13	9	12	10	8	9
35	19	9	10	7	13	10	12	11	8	9
40	20	10	10	8	13	10	12	11	9	10
45	21	10	10	8	13	11	12	11	9	10
50	22	10	11	9	14	11	13	12	9	10
55	23	11	11	9	14	11	13	12	9	11
60	24	12	12	9	14	12	13	12	10	11
65	25	12	12	10	15	12	13	13	10	11
70	26	12	12	10	15	13	14	13	10	11
75	27	13	13	11	15	13	14	13	10	12
80	28	14	13	11	16	14	14	13	11	12
85	29	14	14	12	16	14	14	14	11	12
90	31	15	15	13	17	15	15	14	12	13
95	33.4	16	16	14	18	16	15	15	13	14
99	38	19	18	15	20	18	15	15	14	15



Note: Percentile values for the 10 ITP subscales that indicate the intensity of the preference of each type.

Table 6
Introverted Sensing Type scores for women and homosexual men.

Women (mean, %)		Homosexual men (mean, %)	
Very high	117 (17.25%)	Very high	4 (16%)
High	126 (18.5%)	High	4 (16%)
Medium	152 (22.4%)	Medium	5 (20%)
Low	116 (17.1%)	Low	6 (16%)
Very low	167 (24.6%)	Very low	6 (16%)
Total	678 (100%)	Total	25 (100%)

Note: Comparison of the proportion of Introverted Sensing scores between women and homosexual men, on its different levels of preference.

& Friedt, 1985; Woehlke & Piper, 1980). The causes for these results can be viewed from several perspectives. There is a possibility of some flaw with the instruments that are designed to measure the theory, resulting in a failure to properly assess the types (Loomis, 1982). Moreover, it is possible that Jung's theory contains structural problems that are blocking the progress in its understanding and validation (Metzner, Burney, & Mahlberg, 1981). The results of previous research, together with the present findings, seem to indicate the last point.

It is necessary to question if researchers have been actually failing periodically, even with different instruments and different methodologies, in properly measuring the typology. The evidence seems to indicate that the theory has failed in establishing clear differences between types, and this could be due their similarities, since they share common characteristics proper of the introverted or extraverted attitude, and in the way in which the types manifest the unconscious. Therefore, as evidenced by the present investigation, it is possible to assess the personality by certain attributes of Jungian Typology, but the original structure proposed by Jung seems to be flawed. The question that could arise now is, how is that instruments based in Jung's Typology continue being so extensively used? A possible answer could be the high facie validity of the instrument, since, both users and appliers, can easily identify themselves or others with one of the types (Vacha-Haase & Thompson, 2002). Besides, this theory gives the same value to every single type: each one of them is worthy and none is better than other. The MBTI is one of the most popular personality assessment tools worldwide (Shi & Yang, 2009). Its popularity could be erroneously interpreted as an indicator of its accuracy and utility, which propitiates its indiscriminate use without even questioning the test's basis (Pittenger, 1993). It is also important to consider the economic interests involved, since, to have access to the MBTI, it is necessary to go through a certification process that implies a considerable financial investment (Cunningham, 2012).

On the subject of the Introverted Feeling type and its high prevalence in women and homosexual men, it is worth mentioning that the assumptions made by Jung and Robertson may correspond only to stigmas proper of the time in which the theory was developed, and that will not necessarily reflect nowadays' reality. Nevertheless, it is suggested to carry out subsequent studies that tests these particular hypotheses. Like any research, ours is not exempt of weaknesses. The sampling was uneven in the proportion of men and women, in the age of the participants and in their academic program. In subsequent studies, it is suggested a more randomized sampling method, and also to include open or clinical population, since several other studies investigating this topic have only included university students. Note that the students participating in this project were subjected to a screening process for entering to their respective programs of study, as part of their admissions process, which could be influencing the results obtained in the present study. Even with these weaknesses, and since this was an exploratory research, we strongly believe that this first approach of the theory to Mexican population can be useful for further studies with different designs.

For a copy of the final test that resulted from this validation and its manual, please contact the correspondent author.

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Conflict of interest

The authors have no conflicts of interest to declare.

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