

# Relationship between Personality Traits and Constituent Factors in Impressions of Public Service: Impressions of City Office Staff as a Case Study

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## Abstract

In this study, we examined the factor composition of negative impressions of city office staff among 104 male and female university and graduate students with previous experience dealing with city offices, and the personal traits associated with these negative impressions. The results suggested that negative impressions of city office staff were composed of four factors: “lack of reliability in emotional terms”, “lack of reliability in instrumental terms”, “lack of tangibles”, and “lack of empathy.” Among these, only “lack of reliability in instrumental terms” was associated with “extraversion” from the Big Five personality traits and “empathic concern” from the Interpersonal Reactivity Index.

## Keywords

Negative Impression, Public Service, Big Five, Interpersonal Reactivity Index

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## 1. Introduction

The center of activity in the world economy is currently undergoing a shift from the manufacturing to the service industry. For example, the service industry in the US accounts for over 80% of the US GDP (Takahashi, 2018). Accordingly, improving service industry productivity (i.e., the degree of efficiency realized in generating added value from resources) has become the subject of a lively international discussion. Services are characterized by intangibility—that is, the fact

that what is provided cannot be physically touched—and the fact that they are an effect or an ability that exists as the result of the activities of a provider. For this reason, services are difficult for providers to manage, and the evaluation of service quality often relies on subjective evaluations such as experience and intuitive perception. If it were possible to evaluate service quality objectively, then service quality could be improved, thereby heightening service industry productivity.

According to [Parasuraman et al. \(1988\)](#), customer service expectations are shaped by four factors: word of mouth, experience, advertising, and personal desire. The first three are largely tied up with informational activities. This information shapes personal desire, which in turn, determines the selection of information. In other words, personal desire shapes service expectations, thereby determining whether a service will be used. According to [Kunreuther & Slovic \(2001\)](#), a negative impression of a particular service engenders antipathy toward that service. As a specific example, according to [Taniguchi & Fujii \(2007\)](#), in the event that negative impressions are held toward crew members staffing public transportation facilities, a negative attitude will be shaped toward the use of those facilities. Objectively extracting the constituent elements of such negative impressions and clarifying areas for improvement could be expected to help improve service productivity.

Most commonly used as a questionnaire, SERVQUAL is a multi-dimensional research instrument that can evaluate customer service expectations objectively. SERVQUAL consists of five dimensions (Tangibles, Reliability, Responsiveness, Assurance, and Empathy), and has been evaluated as being extremely influential in terms of both its practical and theoretical aspects ([Grapentine, 1998](#)). It should also be noted that SERVQUAL has been used to heighten positive service expectations. It is perhaps for this reason that SERVQUAL has not been used for negative impressions of services. If it were possible to examine negative impressions using SERVQUAL, customer dissatisfaction might be revealed.

As described above, in the context of service expectations, the degree of personality desire is influential ([Parasuraman et al., 1988](#)). Personality desire, in turn, is associated with various personal traits ([Costa & McCrae, 1992](#)). Personality traits can be quantified using the Big Five personality traits (hereafter “Big Five”) and the Interpersonal Reactivity Index (hereafter “IRI”). The Big Five attempt to explain personality traits as a whole through five basic dimensions (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) ([Costa & McCrae, 1992](#)). For example, in terms of the Big Five, someone wanting to build smooth relationships without antagonizing others while living in a social group would be considered to have high “agreeableness” among their personality traits ([Costa & McCrae, 1992](#)). Furthermore, since service is performed in the context of a relationship between the provider and the consumer, mutual relationships are crucial ([Grönroos, 1990](#)). The degree of empathic reaction in such interpersonal relationships can be evaluated using the IRI. The IRI is an instrument that quantifies the degree of personal empathy using four di-

mensions (Perspective Taking, Fantasy, Personal Distress, and Empathic Concern) (Davis, 1983). Personality traits thus influence service expectations (Costa & McCrae, 1992). For example, people with high agreeableness tend to show more positive evaluations than those with low agreeableness for the same service (Harris & Mowen, 2001; Tan et al., 2004). Empathic concern is positively correlated with customer satisfaction; the higher someone's degree of empathic concern, the more likely they will be satisfied with a service (Anaza, 2014). People with low agreeableness or empathic traits might have lower service expectations compared with those who measure higher in these traits.

Incidentally, to our knowledge, no studies have objectively evaluated negative impressions of service using SERVQUAL or examined the association between these negative impressions and personality traits as evaluated by the Big Five or IRI. If we were to perform such an examination, we could clarify the kinds of elements that constitute negative impressions of service, as well as which personality traits are more conducive to having such negative impressions. This could lead to the development of measures to improve negative service impressions.

In this study, municipal city offices were used as an example of a site of service provision that everyone has experienced. When citizens have negative impressions of city office staff, the perceived value of city offices decreases. This, in turn, exacerbates the situation for users. Therefore, the aim of this study was to clarify the factors that constitute negative impressions of city office staff, as well as which of the personality traits from the Big Five and IRI are associated with these negative impressions.

## 2. Methods

### 2.1. Study Participants

The study participants were 104 young Japanese men and women (52 men, 52 women; mean age  $\pm$  standard deviation:  $22.6 \pm 1.6$  years) with previous experience using a city office. As there were no previous studies upon which to base on a prior power analysis, we estimated sample size using a statistical software GPower 3.1. To detect a 0.5 effect size, alpha level of 0.01, and power of 0.95, we needed to assess 104 participants. All participants were given an explanation of the purpose of the study, and their consent was obtained. Afterward, their online responses were collected using a Google Form. The participants were each paid an honorarium of 1000 JPY. The study was approved by the ethics committee of the Graduate School of Design at Kyushu University (Approval number: 267).

### 2.2. Measurement of Negative Impression of City Office Staff on the Questionnaire

We formulated 22 items relating to negative impressions of city office staff based on SERVQUAL. It should also be noted that the question items were also formulated based on SERVQUAL (Parasuraman et al., 1988). Examples of statements about negative impressions of staff include "The person at the desk at the

city office was not neatly dressed” and “The city office staff do not respond quickly to requests.” The participants responded to each question on a 7-point Likert scale ranging from “I do not agree at all” (1 point) to “I strongly agree” (7 points). Accordingly, higher scores for each question show stronger negative impressions of staff.

### 2.3. Measurement Using the Big Five Personality Traits Scale

Participants responded to the Big Five scale formulated by *Costa & McCrae (1992)* and translated into Japanese by *Wada (1996)*. The scale consists of 60 items comprising five factors (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness). The participants responded to each question on a 7-point Likert scale ranging from “Not at all applicable” (1 point) to “Very applicable” (7 points). Accordingly, higher scores for each scale indicate a higher measurement for each traits.

### 2.4. Measurement Using the IRI

Participants responded to a multi-dimensional empathy measurement scale translated into Japanese by *Sakurai (1988)* from the IRI formulated by *Davis (1983)*. The scale consists of a total of 28 questions comprising four factors (Fantasy, Perspective Taking, Empathic Concern, and Personal Distress). Participants responded to each question on a 4-point Likert scale ranging from “Not at all applicable” (1 point) to “Very applicable” (4 points). Accordingly, higher scores for each scale indicate a higher measurement for each traits.

### 2.5. Statistical Analysis

The composition of negative impressions was investigated using a factor analysis of the 22 question items concerning negative predispositions toward city office staff. Factor analysis was carried out using the maximum likelihood method and Promax rotation. The factor count was determined by parallel analysis, and four items with low factor loadings were excluded. We also examined relationships between personality traits and factors contributing to negative impressions toward staff. After confirming the correlation matrix between independent variables, multiple regression analysis was performed using the forced input method. Values from the negative impression of staff questionnaire were input as dependent variables, and values from nine items (the Big Five and the IRI) were used as independent variables. For the former values used as dependent variables, the mean scores for the sub-items that comprise each factor were used. For statistical analysis, we used the R software package (Version 3.5.0). The significance level was set at 5.0%.

## 3. Results

### 3.1. Factor Analysis

**Table 1** shows the results of factor analysis for the 22 items. Four items were

**Table 1.** Results of factor analysis.

SERVQUAL	22 Items	F1	F2	F3	F4	Commonality
<i>Lack of reliability in emotional terms</i>						
Reliability	They won't sympathize even when I have a problem.	0.905	0.155	-0.179	-0.056	0.767
Reliability	I can't rely on them when I have a problem.	0.874	0.035	-0.125	-0.011	0.67
Responsiveness	City office staff aren't proactive at offering help on various issues.	0.721	-0.109	-0.003	0.200	-0.647
Tangibles	The city office building is inappropriately excessive.	0.683	-0.155	0.220	-0.177	0.419
Empathy	City office staff do not focus their attention on the main concern.	0.665	-0.026	-0.032	0.234	0.645
Assurance	I cannot trust city office staff.	0.593	0.197	0.127	0.052	0.708
Responsiveness	The city office staff do not respond quickly to requests.	0.582	0.319	-0.135	0.166	0.662
Tangibles	The city office does not have up-to-date equipment such as information terminals.	0.469	-0.042	-0.077	-0.062	0.138
Tangibles	The atmosphere at the city office is bad, no matter when I visit.	0.384	-0.135	0.155	0.106	0.242
<i>Lack of reliability in instrumental terms</i>						
Reliability	The service at the city office was not completed by the time I asked.	-0.100	0.870	0.900	0.080	0.632
Reliability	Information is not recorded accurately at the city office.	0.188	-0.120	0.659	0.029	0.593
Responsiveness	The city office did not give a proper explanation regarding my request.	0.302	0.229	0.511	0.045	0.627
<i>Lack of tangibles</i>						
Tangibles	The person at the desk at the city office was not neatly dressed.	-0.029	0.057	0.900	0.080	0.632
Assurance	City office staff do not observe proper etiquette.	0.199	-0.120	0.659	0.029	0.593
Assurance	City office staff are not provided with a good working environment.	0.065	0.229	0.511	0.045	0.627
<i>Lack of empathy</i>						
Empathy	City office staff do not respond to individual requests.	-0.029	0.118	0.151	0.839	0.888
Empathy	City office staff do not take users' personal needs into consideration.	0.199	0.073	0.007	0.674	0.733
Empathy	The city office's opening hours are inconvenient.	0.065	-0.099	-0.127	0.423	0.167
	Alpha coefficients	0.93	0.78	0.82	0.77	

excluded because of low factor loadings. The first factor was composed of nine items, including "I can't rely on them when I have a problem" and "They won't sympathize even when I have a problem." Given the high factor loadings on items related to emotional aspects, such as unfriendliness of city office staff, this was categorized as "Lack of reliability in emotional terms." The second factor was composed of three items, including "The service at the city office was not completed by the time I asked" and "Information is not recorded accurately at the city office." Given the high factor loadings on items related to the inaccuracy of information presented by city office staff, this was categorized as "Lack of reliability in instrumental terms." The third factor was composed of three items, including "The person at the desk at the city office was not neatly dressed" and "City office staff do not observe proper etiquette." Given the high factor loadings on items related to the poor visual impression given by the appearance of the

staff, this was categorized as “Lack of tangibles.” The fourth factor was composed of three items, including “City office staff do not respond to individual requests” and “City office staff do not take users’ personal needs into consideration.” Given the high factor loadings on items related to not giving consideration or responding to users’ needs, this was categorized as “Lack of empathy.” Cronbach’s alpha coefficient was 0.93 for “Lack of reliability in emotional terms”, 0.78 for “Lack of reliability in instrumental terms”, 0.82 for “Lack of tangibles”, and 0.77 for “Lack of empathy”.

### 3.2. Multiple Regression Analysis

Multiple regression analysis was carried out using the mean values for items included in each of the factors relating to negative impressions of staff as dependent variables and personality traits as independent variables. **Table 2** shows the means, standard deviations, and correlation matrices between variables. **Table 3** shows the results of the multiple regression analysis. Of the four factors that constitute negative impressions of staff, it was only in the context of reliability in instrumental terms derived as Factor 2 that significant standardized partial regression coefficients were obtained, for Extraversion on the Big Five ( $\beta = 0.319$ ,  $p = 0.004$ ) and Empathic Concern on the IRI ( $\beta = -0.290$ ,  $p = 0.014$ ). The F value (10, 93) in this case was 1.907 ( $n = 104$ ). The coefficient of determination adjusted for degrees of freedom ( $R^2$ ) was 0.080. The variance inflation factor value

**Table 2.** Mean and standard deviations for each variable, with correlations between variables.

	Mean	SD	F1	F2	F3	F4	V1	V2	V3	V4	V5	V6	V7	V8
F1. Lack of reliability in emotional terms	0.35	0.99	1											
F2. Lack of reliability in instrumental terms	3.36	1.12	0.64	1										
F3. Lack of tangibles	2.79	1.05	0.55	0.52	1									
F4. Lack of empathy	4.42	1.16	0.64	0.43	0.44	1								
<b>Big Five personality traits</b>														
V1. Conscientiousness	3.50	0.92	-0.02	-0.12	-0.14	-0.05	1							
V2. Openness	4.22	0.77	0.03	-0.04	-0.01	0.06	-0.04	1						
V3. Agreeableness	4.53	0.82	-0.08	-0.11	-0.09	-0.24	-0.01	0.14	1					
V4. Extraversion	4.43	0.96	0.11	0.16	-0.09	0.11	0.02	0.33	0.12	1				
V5. Neuroticism	4.45	1.15	-0.12	-0.01	-0.15	-0.07	-0.01	-0.10	-0.10	-0.17	1			
<b>Interpersonal Reactivity Index</b>														
V6. Perspective taking	2.82	0.45	-0.18	-0.04	-0.12	-0.15	0.04	0.27	0.39	0.15	-0.07	1		
V7. Fantasy	2.83	0.49	-0.22	-0.15	-0.24	-0.07	0.12	0.25	0.04	0.25	0.29	0.31	1	
V8. Empathic concern	2.75	0.40	-0.12	-0.27	-0.15	-0.15	0.13	0.09	0.25	0.15	0.26	0.28	0.43	1
V9. Personal distress	2.44	0.44	-0.14	-0.06	-0.16	-0.16	0.00	-0.20	0.00	-0.13	0.64	-0.12	0.25	0.32

**Table 3.** Results of multiple regression analysis.

	Lack of reliability in emotional terms			Lack of reliability in instrumental terms			Lack of tangibles			Lack of empathy		
	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>
<b>Big Five personality traits</b>												
Conscientiousness	0.017	0.172	0.864	-0.097	-0.993	0.323	-0.124	-1.223	0.225	-0.038	-0.375	0.709
Openness	0.079	0.689	0.493	-0.108	-0.977	0.331	0.044	0.386	0.700	0.062	0.539	0.591
Agreeableness	-0.034	-0.307	0.759	-0.102	-0.949	0.345	-0.075	-0.672	0.503	-0.202	-1.814	0.073
Extraversion	0.142	1.257	0.212	<b>0.319</b>	<b>2.918</b>	<b>0.004*</b>	-0.058	-0.509	0.612	0.131	1.160	0.249
Neuroticism	0.005	0.040	0.968	0.135	1.044	0.299	-0.070	-0.519	0.605	0.046	0.342	0.733
<b>Interpersonal Reactivity Index</b>												
Perspective Taking	-0.153	-1.282	0.203	0.116	1.014	0.313	-0.064	-0.536	0.593	-0.101	-0.852	0.396
Fantasy	-0.225	-1.811	0.073	-0.133	-1.110	0.270	-0.172	-1.374	0.173	-0.035	-0.283	0.778
Empathic Concern	0.024	0.203	0.840	<b>-0.290</b>	<b>-2.510</b>	<b>0.014*</b>	0.034	0.281	0.779	-0.039	-0.330	0.742
Personal Distress	-0.074	-0.536	0.594	0.014	0.107	0.915	-0.088	-0.634	0.528	-0.146	-1.059	0.292
Sex (0 = Female, 1 = Male)	-0.057	-0.550	0.584	0.129	1.281	0.203	0.041	0.388	0.699	-0.024	-0.229	0.820
n	104			104			104			104		
F	1.109			1.907			1.036			1.183		
R <sup>2</sup>	0.010			0.080			0.003			0.017		

$\beta$  = Standardized partial regression coefficient; *p* < 0.05.

(VIF) was between 1.106 and 2.035, and no problems of multicollinearity were observed. In addition, regarding the other three factors that constitute negative impressions of staff, no significant standardized partial regression coefficients were found for “Lack of reliability in emotional terms” ( $F(10, 93) = 1.109$ ,  $n = 104$ ), “Lack of tangibles” ( $F(10, 93) = 1.036$ ,  $n = 104$ ), or “Lack of empathy” ( $F(10, 93) = 1.183$ ,  $n = 104$ ). In these cases, the  $R^2$  values were 0.010, 0.003, and 0.017, respectively.

#### 4. Discussion

In this study, we first investigated the factors that constitute negative impressions of city office staff. As result, it was determined that such impressions are composed of four factors (Table 1). Factor 1 was summed up by items relating to friendliness and whether staff were helpful, and was accordingly called “Lack of reliability in emotional terms.” Factor 2 was summed up by items relating to timing and the accuracy of records, and was accordingly called “Lack of reliability in instrumental terms.” Factor 3 was summed up by items relating to staff members’ clothing and attitudes, and was accordingly called “Lack of tangibles.” Factor 4 was summed up by items relating to consideration for individual customers, and was accordingly called “Lack of empathy.” These four factors were consistent with the three of the five SERVQUAL factors, namely Reliability,

Tangibles, and Empathy. In addition, regarding the two other SERVQUAL factors, Assurance and Responsiveness, in this study, as shown in **Table 1**, these were respectively included in the factors of “Lack of tangibles” and “Lack of reliability.” While SERVQUAL has been composed of five factors in previous studies, the question of whether all factors can be posited across various industries has been recognized as a problem (Asubonteng et al., 1996; Carman, 1990). Moreover, SERVQUAL normally evaluates positive expectations. In this study, SERVQUAL was used to evaluate negative impressions, but the factors obtained were consistent with three of the SERVQUAL factors (Reliability, Tangibles, and Empathy), while the remaining two factors (Assurance and Responsiveness) were also included, giving results that did not differ significantly from those when evaluating positive expectations.

Next, we examined which personality traits were associated with the extracted factors making up negative impressions of city office staff. Confirming the correlation matrix between independent variables, and no problems of multicollinearity were observed (**Table 2**). As a result, it was only in the context of the factor “Lack of reliability in instrumental terms” that significant standardized partial regression coefficients were obtained: a positive coefficient for Extraversion on the Big Five ( $p < 0.05$ ) and a negative coefficient for Empathic Concern on the IRI ( $p < 0.05$ ) (**Table 3**). In other words, people with high extraversion and low empathic concern are likely to hold the negative impression that they cannot put any trust in the instrumental support provided by city office staff. People with high extraversion are talkative, friendly, active, and aggressive (Judge et al., 2002; Mooradian & Olver, 1996). Extraversion is positively correlated with disgruntled behavior (Richins, 1983; Mooradian & Olver, 1997; Harris & Mowen, 2001), and people with higher extraversion are more likely to be dissatisfied. Moreover, aggressiveness is also positively correlated with disgruntled behavior (Keng et al., 1995); more aggressive people are more likely to voice complaints. From this, it can be inferred that people with high extraversion are likely to be dissatisfied in situations where the information provided by city office staff is inadequate. Conversely, if staff members were active in providing information on matters such as the content of services and the time required, it might be more difficult for them to be dissatisfied with the service.

Also, Empathic Concern is positively correlated with customer satisfaction; the lower the Empathic Concern, the lower the level of satisfaction with a given service (Anaza, 2014). Empathic Concern is the experience of feeling compassion and pity for the unhappiness of others (Davis, 1983). For example, a person with low Empathic Concern may find it difficult to sympathize with members of staff if the city office is crowded and the staff seems busy.

Furthermore, when empathy is conceived in terms of the two aspects of cognitive empathy and affective empathy (Hoffman, 1984), what we have been discussing as Empathic Concern would be included under affective empathy. Affective empathy is the emotional reaction engendered when the emotional expe-

rience of others is perceived and observed (Davis, 1983), and is related to emotions that occur automatically and unconsciously (Carter et al., 2009). According to Smith (2006), affective empathy promotes prosocial motivations. Moreover, according to Escales & Stern (2003), affective empathy has a stronger influence than cognitive empathy on the evaluation of advertisements; a higher degree of affective empathy is likely to yield a more positive evaluation of an advertisement. In this way, affective empathy is unconscious and affects prosocial motives and the evaluation of advertising. From this, if the current situation at a city office can be conveyed using a bulletin board that would likely evoke emotional reactions such as sympathy for the staff, this could help mitigate negative impressions of city office staff.

On the other hand, the items from the IRI included under cognitive empathy, namely Perspective Taking and Fantasy, did not yield any significant standardized partial regression coefficients in regard to negative impressions of city office staff (Table 3). Cognitive empathy is the accurate reading of others' internal processes (Davis, 1983) and is associated with more complex and higher-order cognitive processes such as theory of mind (Decety & Moriguchi, 2007). According to Mencl & May (2009), people with a higher degree of cognitive empathy are more likely to make ethical decisions, and cognitive empathy has a stronger influence over ethical decision-making relative to emotional empathy. In addition, according to Devoldre et al. (2010), cognitive empathy promotes supportive behavior. Thus, cognitive empathy is conscious and influences ethical and altruistic behavior. City office staff provide typical public services that everyone has experienced. For this reason, users do not attempt to understand the plight of service providers consciously. Accordingly, it seems that cognitive empathy was not related to negative impressions of city office staff. Conversely, when using emergency services or services outside the scope of one's experience (e.g., shelter-based services in the wake of a disaster), devising measures to heighten cognitive empathy, which seeks to understand service providers' position and situation, might prompt supportive and altruistic behavior on the part of service recipients, thereby engendering a virtuous cycle of services.

In this study, we used a questionnaire to quantify negative impressions toward services, and investigated which personality traits were associated with such impressions. From the results, it can be inferred that interventions targeting high Extraversion (a Big Five trait) and low Empathic Concern (an IRI trait) could be effective when devising improvements seeking to reduce negative impressions of service. Furthermore, if staff members were active in providing information on matters such as the content of services and the time required and the current situation at a city office can be conveyed using a bulletin board that would likely evoke emotional reactions such as sympathy for the staff, this could help mitigate negative impressions of city office staff. And if the service provider knows such personality that are likely to have the negative impression and measures to improve it, it will lead to an improvement in the quality of the service.

In the future, to propose methods for improving the quality of service, we believe that investigations involving evaluations using not only questionnaires, but also more objective indicators (e.g., physiological values such as heart rate and an electroencephalogram) will make it possible to propose specific methods to that end.

The limitation must be considered when interpreting the results of the current study. All of the participants were university and graduate students. Depending on the age, the number of times the city office is used and the content of the problems you have are different. Thus, the negative impression of middle-aged and senior citizens on the city office staff seems to be different from the negative impression of university and graduate students. So, the results of the current study may be difficult to support for middle-age and senior citizen. Future studies should investigate in a different group.

## 5. Conclusion

In this study, we clarified negative impressions of city office staff and investigated personality traits related to these impressions. As a result, we suggested that negative impressions of city office staff were composed of four factors, namely “Lack of reliability in emotional terms”, “Lack of reliability in instrumental terms”, “Lack of tangibles”, and “Lack of empathy.” Furthermore, it was suggested that “Lack of reliability in instrumental terms” was associated with Extraversion (a Big Five trait) and Empathic Concern (an IRI trait).

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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