

Should My Device Learn My Identity and Personality?

Minal Jain^(✉), Sarita Seshagiri, and Aditya Ponnada

Samsung R&D Institute India, Bangalore, India

{minal.jain,sarita.s}@samsung.com, aditya1990.p@gmail.com

Abstract. Understanding user identity and personality is vital for designing effective user experiences. Researchers have recognized that identity and personality are a confluence of various constructs. In our study, we examined identity orientation, personality traits and their manifestation on different platforms for 17 software professionals in urban Bangalore. We explored personality distribution of 1174 employees of our organization. Findings showed users to have high personal and relational identity orientations. Our sample was also high on openness and neuroticism and low on conscientiousness, extraversion and agreeableness. We established co-relations between these constructs and examined the self-observer asymmetry in perceiving them. These results inform user experiences on personal devices (including core applications), particularly for individuals who are oriented to their social and personal circles and less towards their community, or more towards accruing social approval than conquering personal challenges.

Keywords: Identity · Personality · Group · Personalization

1 Introduction

Identity is composed of different constructs. Sigelis designed a scale to measure the strength of an individual's independent and interdependent self-construal [1]. The tripartite model of the self, also known as the RIC model [2, 3], recognizes three selves, namely, relational, individual and collective self. Individual identity (also known as personal identity) refers to one's goals, emotions, values, beliefs, aims and so on, while relational identity refers to one's role in relation to others along with the importance one gives to maintaining those relationships. Collective identity indexes individuals to groups based on their race, ethnicity, political affiliation and religion to name a few. Personal or individual identity can be mapped to independent self-construal while collective and relational identity relate to the interdependent self-construal. A fourth component was added to the model of identity by Cheek et al. [4] called the public or social identity which is based on James' model of social self [5] or social representation. This was recognized along with relational and collective identity as the third aspect of interdependent self thereby giving way to a tetra-partite model of self-concept as opposed to the previous tripartite model. In our study, we adopted the tetra-partite model that includes personal, relational, social and collective identity orientations.

However, it has been posited that not all aspects of people's identity are equally central to them [6, 7]. Only those components that individuals find central to their

identity will integrate into their sense of self-concept. It is hence worthwhile to recognize the central aspects to understand a person better. Identity and personality traits of people which form a part of their self as observed by them, differs from those perceived by others. Vazire posits a Self-Other Knowledge Asymmetry model [8] whereby the self is more accurate in predicting low observability personality traits such as neuroticism, whilst others are better at judging traits high in evaluativeness like intellect. This actor-observer asymmetry is useful for exploring identity orientations, since not all aspects of identity are easily discernable by others. The perception of self could be biased for certain aspects, which only a closer study can reveal. Our study involved a comparison between the self and observer perception of identity orientation and personality traits.

Prominence of specific personality and identity traits on public platforms determines the observers' perception of any individual. Different personality types engender varied usage of social media including Facebook or Twitter (e.g. posting pictures, posts etc.) [9–11]. Similarly, perception of identity orientations of any individual is highly influenced by its manifestation on public platforms. However this is an area not widely explored yet.

In our study we aimed at understanding the identity orientation of a closed group of software professionals in urban Bangalore. Bangalore, also called India's Silicon Valley has seen influx of people from all parts of the country, giving it a cosmopolitan nature [12]. The aim of our study was to understand identity orientation and personality traits of such a varied population both from self and observer point of view. We also explored the possible co-relation between one's identity orientation and the personality traits they exhibited. There was also a need to understand how identities are manifested on public platforms and how that influences the observer perception.

2 Method

The study comprised of three major objectives – measuring personality (traits), measuring identity orientation and studying their manifestation on different platforms. We describe each of these parts in subsequent paragraphs.

For measuring personality, the Big-Five Inventory (BFI) was used. It assumes personality model to be comprising of five dimensions, namely, extraversion, openness, conscientiousness, agreeableness and neuroticism. We used a 44-item Likert scale ranging from strongly agree to strongly disagree which consists of 8 items for extraversion (sample item: “I see myself as someone who is talkative”), 9 items for agreeableness (sample item: “I see myself as someone who is helpful and unselfish with others”), 9 items for conscientiousness (sample item: “I see myself as someone who does a thorough job”), 8 items for neuroticism (sample item: “I see myself as someone who can be moody”) and 10 items for openness (sample item: “I see myself as someone who has a few artistic interests”).

Due to the absence of a standard rubric to evaluate BFI, we conducted a personality survey in our organization. Responses from 1174 employees (23.9 % females: 74.95 % in the age group 20–30, 23.4 % in the age group 30–40, 0.02 % on the age group > 40) were gathered. In turn, these responses were divided into 3 categories – top 27 percentile

(the high scoring group), bottom 27 percentile (the low scoring group) and the rest as medium-scoring group.

This formed the basis for creating local norms for each personality construct. This locally established rubric was utilized for examining the position of our participants on all personality traits across this sample of 1174 similar people. Table 1 mentions the mean and standard deviation scores.

Table 1. Mean and standard deviation of personality scores

	Mean	Std dev
Extraversion	3.28	0.67
Agreeableness	3.90	0.55
Conscientiousness	3.59	0.62
Neuroticism	2.82	0.73
Openness	3.61	0.47

In order to measure identity orientation, we used the 35-item Aspects of Identity Questionnaire – IV or AIQ [13] on a 5 point likert scale ranging from “not important” to “extremely important to the sense of who I am”. It consists of 10 items for personal (sample item: “My personal values and moral standards”), 10 items for relational (sample item: “Having close bonds with other people”), 8 items for collective (sample item: “My race or ethnic background”) and 7 items for public identity centrality (sample item: “My popularity with other people”).

17 participants (6 females and 11 males; 10 people between 20–30 years and 7 between 30–40 years) were recruited for the main study. They had similar job profile as those from our organization to make the comparison on personality scale relevant. For each of these participants (U), 4 other people (U1, U2, U3, U4) with varying degrees of closeness from the primary participants were recruited (who we refer to as secondary participants) for the study. Each participant was required to fill the AIQ-IV questionnaire and BFI questionnaire for himself and his/her secondary participants were also required to fill both for him/her.

Subsequently, a card sorting activity was scheduled with primary participants. Each of them was given cards with 25 attributes written on them (one attribute on each card and multiple cards for each attribute). These attributes were adapted from the AIQ-IV and BFI questionnaires (some examples being, “values and morals”, “race/ethnicity” and so on). Along with these, users were given another set of 16 cards with different platforms or spaces written (for example “office desk”, “Facebook profile”, “WhatsApp” etc.). They had to sort the first set of cards under the second type to show which of their attributes manifested on a platform implicitly or explicitly. Users were free to add more attributes or platforms if needed. Later, an open ended interview session was held with respondents where we discussed how different attributes manifested themselves on different platforms according to their categorization.

3 Results

10 out of 17 respondents had strong personal and relational identity orientation with 7 participants being common between the two clusters. Strong social identity orientation was limited to 5 participants and similarly a strong collective identity orientation was found in 5 participants out of 17. The Venn diagram in Fig. 1 shows people at intersections of all identity orientations. It demonstrates that identity orientations and their combinations varied greatly among people. While more than 2 aspects of identity were important for 7 participants, all aspects were low for 2.

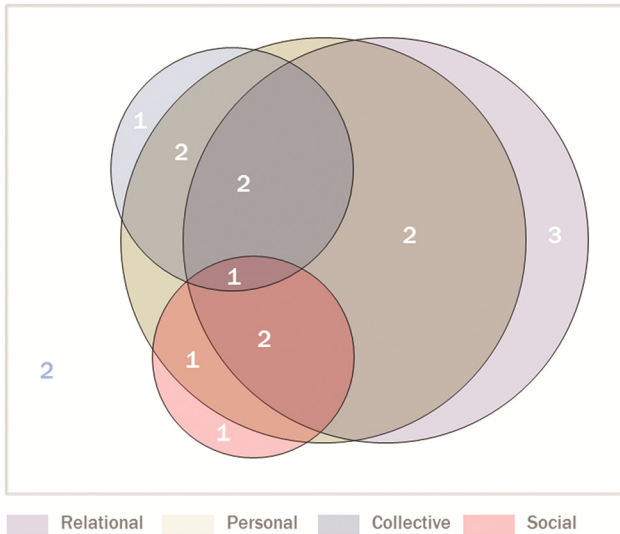


Fig. 1. Identity orientations of 17 participants from our study.

Personal Identity was manifested in personal spaces like home and on public platforms like social media. Its expression though is indirect, for e.g. sharing articles or artefacts to imply one's personal beliefs. However, Relational Identity is only implicitly manifested in the presence of members from one's personal network. Consequently, people assumed and therefore incorrectly estimated Relational Identity through social norms. Sharing pictures of friends and family is a small example of its expression on social media. Interestingly, Collective Identity was not a strong aspect among most of our sample. Yet, it was overestimated by one's social circles. Its manifestations are usually limited to personal spaces like home. Strong collective identity is experienced among the diaspora, who are physically removed from their collective or home. In such cases, manifestations extend from personal to public spaces. Social identity points to the desire for social acceptance. Seeking 'likes' on Facebook or 'followers' on Twitter is a manifestation of this aspect.

We tried to compare deviations in the scores given by 4 members of a user's social circle. Maximum deviation was seen in Relational Identity Orientation (RIO) followed

by Collective Identity Orientation (CIO), Personal identity Orientation (PIO) and Social Identity Orientation (SIO). A significant difference in this deviation was found in the case of RIO and SIO ($p = 0.0076$) via the Wilcoxon test. It indicates that RIO is difficult to evaluate for anyone but the self. It is not expressed publicly and can be misconstrued according to one's social role or generic social norms. SIO though, is easy for others to judge and hence observer-reported scores are closest to the self-reported scores.

Personality data of all was similarly analyzed. 17.6 % people ranked high on extraversion, 47 % ranked low and 35.3 % lay in the medium range. For agreeableness, 29.4 % were in the high range, 17.6 % lay in the mid-range and 52.3 % were low on agreeableness. 5.8 % participants were in the high range of conscientiousness, 35.3 % in the medium range and 58.9 % in the low range. 47 % of our users were high on neuroticism, followed by 41.2 % in the medium range and 11.8 % in the low range. 58.9 % participants were high on openness, while 29.4 % and 11.8 % medium and low on the same respectively. This distribution of observed traits can be attributed to the demographics of the chosen captive user base. The sample primarily included members between 20–30 years, who had joined the company after having recently graduated from college which might be critical for their high proclivity to new experiences, low levels of conscientiousness and high neuroticism (low emotional stability). Since most people were recent urban migrants, it is likely that they were cautious and hence low on extraversion and agreeableness.

Similar to identity orientation, we compared the deviations in the scores given by a participant's social circles to the scores the participant gave himself for the BFI personality traits. Wilcoxon test showed significant difference between the deviations in conscientiousness and agreeableness ($p = 0.0335$), conscientiousness and openness ($p = 0.0093$), agreeableness and neuroticism ($p = 0.0092$) and neuroticism and openness ($p = 0.0174$). Similar to earlier studies [8], we found innate qualities such as conscientiousness and neuroticism, difficult for social circles to gauge, but openness and extraversion were easily estimated.

We computed the spearman rank correlation coefficient for self-reported identity and personality measures. Moderate correlations occurred between neuroticism and PIO ($\rho = 0.527$, $p = 0.03$) and openness and RIO ($\rho = 0.512$, $p = 0.036$). So, people high on PIO can be assumed to be very particular about their ideas, beliefs, thoughts and goals. This engenders low emotional stability (high neuroticism), thereby explaining the correlation. Users high on openness might seek new experiences to expand their horizons. In the process, they will increase and strengthen their network/relationships, thereby causing high relational identity.

No significant co-relation was found between deviations observed in identity scores reported by members of users' social circle to the self-reported personality scores of users. Moderate co-relation was observed between average deviation in the scores reported by social circles in PIO to the self-reported SIO of the primary participant ($\rho = 0.557$, $p = 0.02$), also indicating that PIO of people high on SIO tends to be misjudged by observers. It reinforces the fact that PIO gets masked by conspicuous SIO. Average score on CIO reported by social circles was positively moderately co-related to the self-reported CIO of the user ($\rho = 0.512$, $p = 0.036$). This shows

that collective identity is easily revealed and recognized on public platforms or face-to-face. Average score on SIO reported by social circles is also co-related to self-reported scores of CIO ($\rho = 0.544$, $p = 0.024$), personal identity ($\rho = 0.664$, $p = 0.003$) and social identity ($\rho = 0.63$, $p = 0.0067$). Thus, people with high CIO, SIO or PIO are evaluated high on SIO by their social circles. Social identity is easily manifested and perceived by others. For PIO and CIO though, this correlation could be due to the nature of social media where sharing anything on that platform is seen as seeking social approval through ‘likes’, ‘comments’, ‘following’ or ‘endorsement’. This is true of sharing personal communications, face-to-face too.

Card sorting data yielded certain insights. Sexual Orientation for participants from LGBT groups was critical. For users with high ‘openness’ and ‘extraversion’ it was widely expressed on public platforms through their physical appearance or posts on social media, while for others low on these aspects, it was expressed within personal networks alone. Most people expressed their hobbies (a vital aspect of PIO) on different platforms. Phone wallpapers for certain personality types were a reflection of their current thoughts, mood, hobbies or goals. This was contrary to those who neither changed their wallpapers nor customized the device. Emotions and feelings were also differently expressed by different personalities. While certain users withheld expressing emotions that evoked deep feelings (especially negative ones), others widely used social media or publicly visible spaces such as WhatsApp status to express themselves. Conversing on public platforms with many friends was uncommon in people with low ‘extraversion’, who maintained personal blogs to express themselves. Image sharing behavior also varied across participants. Some abstained from displaying pictures even on semi-personal platforms (WhatsApp) while others freely shared images on open media such as Facebook. Display pictures such as avatars or icons were preferred on other platforms.

4 Discussion

Our research presented here helped us understand the identity and personality orientation of a segment of IT professionals in urban Bangalore. We computed the co-relations that existed between these traits and how their varied manifestation led to a self-observer asymmetry in identity and personality perception. Such an exploration is worthwhile for user-experience designers and researchers in developing experiences on mobile platforms and wearables (to name a few) that are tailored to a user’s identity and personality. Needs and expectations of a user with a strong PIO will be quite different from those with strong RIO. It will hold true for users with CIO and SIO too. Moreover, users’ personality determines their acceptance or behavior towards a product. A person high on openness could be an early adopter for a new technology or feature, as against someone low on that trait.

Identity is critical to personalize the device for the user. This is especially needed when the device is a personal mobile assistant or device, which will be used by an individual time and again. There are differences in terms of how people personalize their wallpaper on the mobile. Someone with high RIO may adorn their wallpapers with snaps of family members and friends. At other times, wallpaper may include motivational

quotes, or images of artifacts created by users themselves. Such instances may imply that PIO is high for users. It is worth examining how users change their wallpapers on special occasions such as festivals, ceremonies and events. Some of our users revealed that they liked to have snaps of lighted *diyas* (candles) during *Diwali* (festival of lights) or send family snaps and e-cards to each other. Others sent self-created digital artifacts (patterns or paintings) to each other. It is probable that users experience high CIO or RIO at such times. For people with dominant PIO, Diwali holidays may well be a time to undertake an online course or module.

Apart from Wallpapers, understanding the patterns of search results could be rewarding. For instance, queries and searches done by users could be curated according to their interests, which in turn are influenced by their identities. Contact List or Address Book on mobile phones is another area that should be explored. It will be worthwhile to examine how they store their contacts, i.e. what names do they use to store their contacts under. It is likely that users will organize their contacts in terms of their profession or their relation with the user. An observation like this will need further investigation to check if it reflects that such users have either one aspect of RIO or even CIO.

Different aspects of a user's identity can show up at certain times or events, which indicates that identity manifestation is contextual. As technology providers, we have to be sensitive to such converged and contextual identities and accordingly provide features, applications and services. Sensitivity in understanding and responding to such identities will decide whether or not a product/experience gains user appeal. Ideally, such experiences can even boost self-esteem of users.

Going forward, we also will explore how personality affects manifestation of emotion based on the use of paralinguistic elements and how this is perceived by different personality types. Along with this, we also want to examine media preference of various personality types for expression of emotions. An attempt to answer these can then lead to design and development of intelligent user interfaces.

There were certain limitations in our present study phase. For instance, we found it difficult to find a pattern or inconsistency in behavior due to the varied backgrounds of our sample set. It will be interesting to replicate the same study with a bigger user sample with some variables held constant. Restricting the study to certain identity types and studying difference in personality traits and their manifestation can give richer insights into the effect of personality trait in identity manifestation. It will also be worthwhile to study how these identities and their manifestations change over a specific period of time.

We should also devise more methods to gather and analyze user activity on social media, whilst simultaneously observing their physical spaces (e.g. fly-on-the-wall). Such a method will provide data with greater accuracy on how different aspects of users' identity are manifested or withheld. However the tradeoffs to be considered in such a case are the risks it can pose to user privacy.

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