

The Effect of Individual Needs, Trust and Identification in Explaining Participation Intentions in Virtual Communities

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Abstract

This paper studied individuals' intentions to participate in virtual communities. In order to assess what influences participation intentions, we studied individual-based factors (members' social needs and self expression needs), trust and identification. We found that although needs deficiency-based motivation theory is useful to explain participation intentions, trust and identification play an important moderating role.

1. Introduction

Virtual Community (VC) leverages on the ubiquitous reach of the Internet to locate and gather interest groups, to provide these groups with convenient visual interface tools supporting asynchronous and synchronous group interactions [17]. As the Internet matured in the late 1990s, VC expanded from plain text chatrooms and newsgroups to more interactive and graphical virtual world. VCs are by far one of the most popular cyber-platforms for people to interact [22]. Besides facilitating interactions among the Internet users, VCs have also generated business opportunities. VCs are an essential component in the business model of some organizations. Some firms use such communities as a new channel to reach prospect customers or to maintain relationships with existing ones. In other cases, the advertising revenue generated by VCs may be a vital income for small businesses.

However, the mere existence of technical infrastructure does not guarantee that individuals will be willing to join and stay in a particular VC [10]. Similar as other computer-mediated communications, a "critical mass" or minimum number of people must be available in VCs in order to attract new members or sustain interactions between existing members [29]. Without lively interactions, users will either stop participating or migrate to larger groups [20], and the

community will lose valuable benefits that can in turn attract new members [10]. Participation in these communities is voluntary in nature. Individuals can choose to participate in one or multiple communities. They can also vary in their involvements in different communities, participating actively in some and occasionally in others [46]. Previous research suggested that VC member's intention to stay, willingness to help, intention to spend time and intention to money are of great concern for VC organizers [11,32]. In order to enjoy the economic and intangible benefits from VCs, VC organizers need to understand what attracts online members to stay in a community and be willing to spend time, efforts or money in the community. Therefore, we wish to contribute to this understanding by studying the impact of individual needs, trust and identification on member's participation intentions in VCs.

2. Literature Review

2.1. Typology of VC

Based on the consumer needs fulfilled by VCs, Armstrong and Hagel [4] categorized VCs into four types: 1) communities of transaction which facilitate the buying and selling of products and service; 2) communities of interest which bring together participants who interact extensively with one another on specific topics; 3) communities of fantasy which create new environments, personalities or stories and where people can explore new identities in imaginary worlds of fantasy; and 4) communities of relationships which are formed around certain life experience that often are very intense and can lead to the formation of deep personal connections. Armstrong and Hagel's [4] typology helps us understand how different VCs generate revenue and create value through different ways such as usage fees, content fees and advertising fees. The business model of VCs, especially in the case of communities of fantasy and relationships,

determines that the size of revenues depends mostly on member's participation.

Participation intentions could be reflected in following four ways. Member's *intention to stay* leads to greater member base. The *willingness to help* distinguishes lurkers from participants [35]. Compared to lurkers who seldom post nor contribute, participants actively get involved in the community and have more positive contributions to the community development. Member's *willingness to help* creates positive image of the community, which attracts new members while gives incentives to existing members to stay. Different from intention to stay, member's *willingness to spend time* indicates a more active type of participation. Members are not only willing to keep their membership but also to spend time in the community, which contributes to the traffic volume of the community, and community traffic is directly related to the community profitability in most cases [24]. Last but not least, member's *willingness to spend money* directly contributes to the VC organizer's bottom line. In summary, members' intention to stay, willingness to help, willingness to spend time and money reflect participation intentions. Studying them also has important practical implications, in additional to theoretical ones.

2.2. Social Needs and Self Expression Needs

Motivation research stated that need deficiencies motivate a person to engage in certain actions to fulfill those needs. Individuals' needs can be categorized into utilitarian and hedonic based [15]. Broadly speaking, people with utilitarian motivation focus primarily on instrumental and functional value, whereas people with hedonic motivation pay more attention to fun, pleasure and excitement. It is also widely agreed that hedonism and utilitarianism are not necessarily two ends of a one-dimensional scale [44]. These different motivations mapped onto different components of product evaluations and attitudes [31]. Take shopping for an example. In the utilitarian view, consumers are concerned with purchasing products for their functional values. In the hedonic view, consumers may treat shopping, the process itself, as potential entertaining and enjoyable experience [14].

Utilitarian and hedonic needs are evident in the context of VCs. In communities of relationship, people take part in VCs with the intention to make more friends. We call the need to socialize with others as "social need". The formal definition of social need in a VC is a need to receive help and support from other community members, socialize informally through synchronous and asynchronous communication,

discuss and exchange ideas, form relationship, and get involved with other members [37]. Such social need can be treated as a kind of hedonic need, as interaction with others in the communities, as the process itself, become a source of fun, pleasure and excitement.

In the communities of fantasy, people can create new personality and stories as they wish and treat it as a chance for their self expression. Self expression is the course of action which provides actor with an anchor of his/her identity, thus self expression needs are defined as the need to present one's identity to other people [11]. Self expression is a kind of utilitarian need, because self expression is a means to accomplish the objective of expressing self identity in the community.

Social needs and self expression needs can co-exist and jointly influence member's attitudes and behaviors in VCs. However, the exclusive use of individual needs to explain community participation intention is inadequate. As mentioned previously, participation in a particular VC is voluntary in nature. In addition, there are numerous VCs of a similar type existing in the Internet. An individual can easily choose which community to join. Need based motivation theory is not sufficient to explain why a member wants to participate in a particular VC, instead of moving to other similar communities.

2.3. Trust and Identification

Trust is the belief that the result of somebody's intended action will be appropriate from our point of view [32]. In specific, we focus on generalized trust which is an expectation of goodwill and benign intent [47], or what Barber [7] referred to as fiduciary trust, the "expectation that partners in interaction will carry out their obligations and responsibilities, that is, their duties in certain situations to place others' interests before their own". In the context of VCs, we define generalized trust as a belief that members will behave appropriately by not taking advantage of others. It is demonstrated that when relationships are high in trust, people are more willing to engage in social exchanges and cooperative interactions.

We need to differentiate generalized trust from dyadic trust. Dyadic trust rests on intimate familiarity with a particular individual [38]; whereas generalized trust relies less on direct knowledge and more on affiliation or reputation [28]. Trust that are generalized to others in the social unit as a whole characterizes communities with strong social capital [38] and encourages members to interact or even help others in the same community despite limited or even no history of interactions. Therefore, generalized trust is more relevant to our study.

Identification is the process whereby individuals see themselves as one with another person or group of people [34]. Krarmer et al. [27] asserted that identification with a group enhances concerns for collective processes and outcomes. Two direct consequences of identification constitute the positive influence of identification on member's behaviors in a community. Firstly, individuals tend to choose activities that support the collectives embodying these identities [6]. Secondly, identification affects the outcomes associated with group formation, including group cohesion and altruism [43].

Although trust and identification have been recognized as important factors in influencing group behaviors, most of the applications are in organizational settings and few are studied in VC settings [49]. We also found no prior research which combined individual needs with trust and identification to explain members' intentions in VC. It would be interesting to examine how these factors influence VC members together.

3. Research Model and Hypotheses

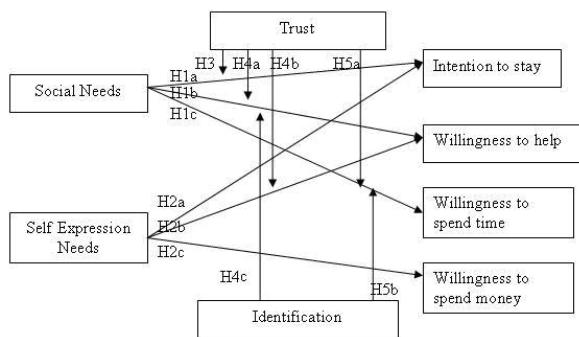


Figure 1. Research Model

Our theoretical model (see Figure 1) explores the effect of social and self expression needs on VC members' intentions under different levels of trust and identification. In this study, in terms of the member's participation intentions, we focus on the intention to stay, willingness to help, willing to spend money and willingness to spend time because they are essential for the VC's performance and profitability as mentioned before. We formulated our hypotheses (Figure 1) selectively based on prior literature. Therefore, not all possible relations are hypothesized.

Preece [37] posited that members with social needs in VCs aim to make more friends. Members have the intention to stay so as to fulfill their social needs. Furthermore, with the intention to socialize with others, members are motivated to help others not only because helping others creates positive images of themselves,

but the helping process itself is also a means of socializing and communicating with others. Moreover, members are willing to spend more time in the community in order to interact with other members; however, social needs do not necessarily motivate VC members to spend more money in the community. It is argued that activities to fulfill hedonic needs evoke a sense of guilt [25]. The feeling of guilt makes these activities more difficult to justify. As a result, members who join VC with social needs will tend to refrain from spending money in the community due to the difficulty of justification. Therefore, we hypothesize that:

H1a: Members with higher level of social needs have stronger intentions to stay in the virtual community.

H1b: Members with higher level of social needs are more willing to help others in the virtual community.

H1c: Members with higher level of social needs are more willing to spend time in the community.

In the presence of self expression needs, Calvert et al. [11] posited that members would tend to showcase their unique characteristics, personality and identity to other people to realize their self worth. As a result, members will have the intention to stay in the VC because the community provides the platform for them to accomplish such objectives. Members would also exhibit willingness to help, because helping others can further enhance the perception of the self worth and accumulate goodwill. In addition, social presence theory [41] asserted that the online context has low bandwidth and low social presence. Thus, in order to achieve self expression objective, members have to rely on the available cues, such as digital items [45]. In general, members with self expression needs are more likely to spend money on digital items and decorations for their homepage so as to achieve the self expression goal. Therefore,

H2a: Members with higher level of self expression needs have stronger intentions to stay in the virtual community.

H2b: Members with higher level of self expression needs are more willing to help others in the virtual community.

H2c: Members with higher level of self expression needs are more willing to spend money in the community.

In addition to the main effects of social needs and self expression needs, we found that trust and identification might play a moderating role in the model, mostly in the cases where members are driven by their social needs to participate in the community. Since social needs depict the urge to interact and form relationships with other people, members with such needs require the assurance that the social relationships

that are formed or to be formed in the community are positive. If members believe that others in the community are trustworthy, they will be more convinced that they are likely to make friends and form relationships in the community. Consequently, they will have stronger intention to stay in the VC. Therefore,

H3: Members with higher level of social needs have stronger intentions to stay in the virtual community under high levels of trust.

In the presence of social needs, member's willingness to help is contingent on whether the goodwill shown through helping can be reciprocated and benefits future interactions. When relationships are high in trust, people are more willing to engage in social exchange in general and cooperative interactions in particular, because they can be assured that others will not take advantage of their goodwill. Thus when trust is high, helping behaviors are more likely to occur. Therefore,

H4a: Members with higher level of social needs are more willing to help others in the virtual community under high levels of trust.

Similarly, in the presence of self expression needs, member's willingness to help depends on whether they believe that they will get the appreciation and recognition from fellow members, which enhances the perception of their self worth. Therefore,

H4b: Members with higher level of self expression needs are more willing to help others in the virtual community under high levels of trust.

Member's identification also leads to altruism behaviors in the group [43]. In the presence of social needs, when a member identifies himself/herself as a part of the group, he/she is more likely to help others because of their common identity.

H4c: Members with higher level of social needs are more willing to help others in the virtual community under high levels of identification.

In the presence of social needs, members want to have more interactions with other people in the VC. Spending more time to interact with other members will give members more opportunities to make friends and develop deeper relationships. However, when other members are perceived to be untrustworthy, members are unwilling to spend time socializing in the community. Therefore,

H5a: Members with higher level of social needs are more willing to spend time in the virtual community under high levels of trust.

As mentioned above, members want to make more friends in the presence of strong social needs. However, if identification is high, it implies that they have already identified with others in the communities. It is likely that they have already acquainted with enough members in the VC, as perceived by themselves. Therefore, they may be less motivated to spend time because they believe the marginal return in terms of increases in the number of social relationships cannot justify the time put in. Therefore,

H5b: Members with higher level of social needs are less willing to spend time in the virtual community under high levels of identification.

4. Research Methodology

4.1. Pre-Study

In order to further confirm the underlying factors of member's utilitarian and hedonic needs in VC, we have focused our attention on a Chinese VC, Cyworld.com.cn which has the attributes of both communities of relationship and communities of fantasy. In this VC, members can interact with each other, create their own homepage, purchase digital items to decorate their homepage and also buy gift for their friends. We have conducted ten email interviews with its members in a period of two weeks to identify specific needs of members of the VC. We found that maintaining and creating social relationships (i.e. social needs) and self-expression are, indeed, two most important reasons behind member participation.

Subsequently, we conducted a cross sectional survey to test the hypotheses. This methodology was chosen because it enhances generalizability of result [16].

4.2. Operationalization of Constructs

Table 1 provides formal definitions of the constructs. These constructs were measured using items adapted from prior studies to enhance validity [42] whenever possible.

Table 1. Definition of Constructs

Construct (Abbre.)	Definition
Social Needs (SOC)	The need to receive help and support, socialize informally through synchronous and asynchronous communication, discuss and exchange ideas, form relationship, and get involved with other members [37].
Self Expression	The need of presenting one's identity to other people [11].

Needs (EXP)	
Trust (TRU)	A belief that members will behave appropriately by not taking advantage of others (adapted from [32])
Identification (IDEN)	The perception of oneness with or belongingness to some human aggregate [6].

Four control variables that were measured include age, gender, years of web experience and membership tenure. Five point Likert scale [30] is used to measure all the independent and dependent variables. A list of survey questions can be found in Appendix.

4.3. Conceptual Validation

Given that the items for measuring the constructs were adapted from various sources for the study, all of the questions were subjected to a two-stage conceptual validation exercise based on procedures prescribed by Moore and Benbasat [33].

4.4. Survey Administration

The survey was also conducted in Cyworld.com.cn. The whole survey process lasted two weeks, from early to mid April, 2006. Surveys were conducted with randomly selected VC members through emails. Among the 1000 surveys distributed to the members through emails and private messages¹, 103 responses were collected through emails, yielding a response rate of 10%. Due to the incompleteness of some questionnaires and data file errors, there were 90 valid responses included in our data analysis.

5. Results

5.1. Reliability and Validity

Descriptive statistics of the respondents are presented in Table 2.

Table 2. Descriptive Statistics

Categories	Respondents' demographics
Gender	Male (30%); Female (70%)
Age	Less than 15 years old (3.3%) 15 – 19 years old (8.9%) 20 – 24 years old (65.6%) 25 – 29 years old (18.9%) 30 – 34 years old (2.2%)

¹ Two identical copies of survey questionnaires were distributed to one member through email and private message to ensure the delivery of the questionnaire.

	35 – 40 years old (0%) More than 40 years old (1.1%)
Web experiences	Mean: 5.8 (years) Std. deviation: 2.1 (years)
Membership tenure ²	Mean: 8.4 (months) Std. deviation: 5.13 (months)

There are more female respondents which roughly matches Cyworld's actual member profile. The mean and standard deviation of membership tenure indicate that we have a good mix of new and experienced members.

We conducted a principal component analysis and the result is shown in Table 3. Five factors (with eigenvalues above 1) are extracted, explaining 68% of total variance.

Table 3. Principle Component Analysis

	Rescaled Components				
	1	2	3	4	5
EXP1	.077	.017	.043	.290	.816
EXP2	-.017	.293	.039	.667	.345
EXP3	.354	.336	-.019	.635	.162
EXP4	.149	.227	.215	.637	.042
EXP5	.300	.465	-.045	.075	.550
IDEN1	.161	.546	.319	.378	.337
IDEN2	.080	.896	.036	.246	.023
IDEN3	.266	.801	-.044	.257	.029
IDEN4	.237	.641	.161	.426	.235
IDEN5	.311	.233	.285	.611	.114
SOC1	.156	-.129	.768	-.028	.178
SOC2	.102	.066	.769	.411	-.141
SOC3	-.021	-.028	.786	.426	-.153
SOC4	.081	.375	.790	-.085	.161
TRU1	.756	.042	.014	.280	-.012
TRU2	.782	.138	-.106	.203	.094
TRU3	.556	.250	.146	-.054	.401
TRU4	.763	.126	.175	.180	.182
TRU5	.602	.136	.183	-.034	-.010

Bolded factors have loading values of more than 0.35 on an unintended factor. Several items are of questionable quality with regard to its convergent and discriminant validity. These results probed us to review the items in more details.

A re-examination of self expression construct reveals that there are three sub-dimensions under this construct: creative expression (EXP2), representation of achievement (source of price) (EXP3 and EXP4) and

² The community has been established for one year.

symbolization of personal history (EXP1 and EXP5) [39]. The last dimension, symbolization of personal history, may differ from the first two dimensions, since it requires a significantly higher appreciation of VCs for respondents to acknowledge that their activities in the community symbolize their personal history. This degree of appreciation is difficult to achieve in a virtual setting, where online identities may not match offline identities. Hence, these two items may not be as relevant in a virtual setting. Therefore, these two items are excluded from subsequent analysis.

Items measuring identification were originally developed for physical communities. Some of them may be inappropriate in the context of VC. For example, most people probably would not talk to people they know personally about their involvement in VCs. Moreover, some people may assume different online identities which they want to keep to themselves. Consequently, IDEN5 is probably irrelevant here. IDEN1 is a self constructed item, which reflects a kind of emotional involvement with the virtual community. This item does not match the definition of “oneness” and “belongingness” closely. Therefore, both IDEN1 and IDEN5 are removed. There is a lack of theoretical support to remove items IDEN4 and TRU3. Therefore, we kept both for further analysis.

A confirmatory factor analysis was conducted in LISREL 8.4 to confirm the validity of the measurement model. The convergent validity of these constructs can be validated using reliability coefficient, average variance extracted and composite factor reliability.

Table 4. Reliability, AVE and CR

	Cronbach's Alpha	AVE	Composite Reliability
Trust	0.804	0.461	0.807
Identification	0.881	0.725	0.887
Social needs	0.828	0.557	0.830
Expression needs	0.725	0.480	0.733

Cronbach's alphas are above the recommended 0.70 level [36]. Two constructs (trust and self expression needs) do not satisfy the criteria of having an AVE above 0.50, though they are very close to it. Composite reliability factors all satisfy the criteria of being larger than 0.70. Convergent validity of these constructs is generally supported.

Discriminant validity can be checked by observing the correlation matrix.

Table 5. Correlation Matrix

	EXP	IDEN	SOC	TRU
EXP	1.00			
IDEN	0.73* (0.08)	1.00		

SOC	0.44 (0.11)	0.23 (0.11)	1.00	
TRU	0.61 (0.10)	0.50 (0.10)	0.27 (0.12)	1.00

As shown in Table 5, the correlation between self expression and identification is significant at 5% level. This is unexpected, since the definitions of these two constructs are discernibly different and the face validity of these items is supported in the sorting process. Thus we assessed the discriminant validity by re-examining the chi-square difference of unconstrained and constrained model for the pair of construct [19]. The chi-square differences turn out to be significant. Therefore, the discriminant validity is generally supported.

We evaluated the overall fit of the measurement model subsequently. A model was estimated in which every item was restricted to load on a priori specified factor [3]. In this case, four factors were analyzed using the LISREL 8.4. Although the initial chi-square statistic was 136.45, it was accepted that χ^2 is affected by sample size [8]. The goodness-of-fit index of 0.84 was not satisfactory, but researchers suggested that when the sample size is less than 200, the goodness-of-fit index might reject a good model [9,35]. Therefore, we relied on other indices to assess the fitness of the model χ^2/df was 1.59, which was below the suggested 3.0 value, indicating a good fit [26]. Both the comparative fit index (CFI) and the normed fit index (NFI) were above or close to the acceptable value of 0.90 (CFI = 0.95, NFI = 0.88). The root mean square error of approximation (RMSEA) was 0.077, which was below the 0.08 cut-off point for good fit [21]. In summary, the measures used show adequate measurement properties.

5.2. Regression Analysis

Before fitting the data into a regression model, we standardized the independent and moderator variables that were measured on a continuous scale, as suggested by Frazier et al. [18]. This procedure reduced potential problems associated with multicollinearity among variables in the regression equation [18]. To analyze the individual moderator hypotheses, hierarchical moderated multiple regression [40] is used, since this method is preferred to check moderating effects when either the predictor or the moderator variable is measured on a continuous scale [1].

5.2.1. Intention to Stay. Change in R^2 and the estimated value of coefficients are shown in Table 6. Unstandardized coefficients are used to interpret the

result, since in equations that include interaction terms, the standardized coefficients for the interaction terms are not interpretable [18].

Table 6. Regression coefficients and R²

Variables	Control	Main	Full
Age	.096	.159	.166
Gender	-.314	-.008	.002
Web experience	1.67E-5	.001	.000
Tenure	.012	.014	.018
TRU [#]		-.378***	-.296**
IDEN [#]		-.115	-.173
EXP		.405***	.388***
SOC		.311***	.274**
SOC*TRU			.216**
R ²	0.015	0.457	0.489
ΔR ²		.442***	.032***

*: p<0.10; **: p<0.05; ***: p<0.01
#: reversely coded for easy interpretation of moderating effects
^ Same notation applies to table 7, 8 and 9

Results in Table 6 show that the inclusion of interaction term significantly improved the model's R². The positive value of the interaction term indicates that when trust is high, social needs is positively related to the intention to stay. H1a, H2a and H3 are supported.

5.2.2. Willingness to Help.

Table 7. Regression coefficients and R²

Variables	Control	Main	Full
Age	-.072	.000	-.020
Gender	-.519*	-.262	-.164
Web experience	.002	.002	.002
Tenure	.034	.036*	.034*
TRU [#]		-.202*	-.186
IDEN [#]		-.164	-.186
EXP		.419***	.355**
SOC		.230**	.227**
SOC*TRU			.020
SOC*IDEN			.008
EXP*TRU			.140
R ²	0.069	0.468	0.486
ΔR ²		0.399***	.018

H1b and H2b are supported. However, insignificant R² indicates that the moderation effects are not detected; therefore, H4a, H4b and H4c are not supported.

5.2.3. Willingness to Spend Time.

Table 8. Regression coefficients and R²

Variables	Control	Main	Full
Age	.576***	.639***	.659***
Gender	-.601*	-.181	-.178
Web experience	.004	.000	-.001

Tenure	-.003	.012	.018
TRU [#]		-.173	-.031
IDEN [#]		-.602***	-.740***
EXP		.209	.224
SOC		.129	.054
SOC*TRU			.297**
SOC*IDEN			-.276*
R ²	0.117	0.420	0.460
ΔR ²		.303***	.040*

The results in Table 8 show that the inclusion of interaction term significantly improves the model's R². The positive value of the interaction term social need*trust indicates that when trust is high, social needs are positively related to the willingness to spend time. H5a is supported. The negative value of the interaction term social*identification suggests that when identification is high, social needs are negatively related to the willingness to spend time, supporting H5b. However, H1c is not supported.

5.2.4. Willingness to Spend Money.

Table 9. Regression coefficients and R²

Variables	Control	Main
Age	.177	-.019
Gender	-.593	-.165
Web experience	.000	.002
Tenure	.025	.034
TRU [#]		-.202*
IDEN [#]		-.164
EXP		.419***
SOC		.230**
R ²	0.035	0.136
ΔR ²		.101*

Self expression needs are significantly related to the willingness to spend money. Thus, H2c is supported.

6. Discussion

The moderation effects of trust and identification on the relationships between social need and self expression need and willingness to help (H4a, H4b and H4c) are not supported by data. Whereas, the main effects of social need and self expression need on willingness to help (H1b and H2b) are both significant. One possible explanation is that the main effects of the social needs and self expression needs are strong and dominate the moderation effects of trust and identification. Another possible explanation is that the moderation effects of trust and identification on willingness to help are based on the premises that members are willing to help others if they believe that

their goodwill will be reciprocated in the future and when members perceive themselves as part of the group, they will be more likely to exhibit pro-group behaviors. However, participation in most virtual communities is voluntary in nature. As a result, the group characteristics could be volatile. Future interactions may be elusive. In this case, reciprocity is not a major concern when a member decides whether or not to help others in the community. Furthermore, even if a member can identify himself with the group, the lack of anticipation of future interactions may negatively affect member's intention to exhibit pro-social behaviors [43].

Furthermore, the main effect of social need on willingness to spend time (H1c) is not significant; meanwhile, the moderation effects of trust and identification (H5a and H5b) are significant. One possible explanation is that in view of the significant moderation effects, the main effect of the social needs is not evident at all. In fact, the significance of main effects can be interpreted only after moderating effects were found to be insignificant [12].

Moreover, control variable, age, turns out to be significant shown in Table 8. One possible explanation is that when age grows, VC members tend to have more disposable time. It is particularly true when we compare VC members who, judging by their ages, are still studying in secondary school and those who are at their early twenties since secondary school students live at home and might be under tight monitoring by parents, compared with university students.

Theoretically, our paper found that social needs, self expression needs, trust and identification influence VC member's participation intentions. Additionally, the main and moderation effects differ when different measure of participation intention is considered. Practitioners should note the differences and understand what they need to provide when they want to achieve a certain goal. For instance, since self expression needs encourage member to help others. VC organizers can create means to give proper recognition to helpful VC members, thus giving them more motivation to contribute in the future.

7. Limitation

One of the major concerns associated with studies on moderation effect is the lack of power [18]. Some of the moderation effects that we are interested in turned out to be insignificant. A few factors may contribute to this lack of power. Firstly, our sample size may be too small to detect true moderation. Secondly, the scale of our dependent variable is too "coarse" (i.e. not enough response options are provided) [18, 12]. Lastly, the

reliability of measures affects the power of the test as well [2]. In our paper, two constructs failed to meet the criterion of having AVE higher than 0.50. Low reliability constitutes a limitation of this paper.

In addition, since Cyworld.com.cn is a Chinese VC, cultural, social and technological factors may bias the results. Therefore, the results of the model should be validated across various cultures and nations for establishing generalizability.

8. Conclusion

Our paper investigated individuals' intention to participate in VCs. We hypothesized that there would be some interaction effects between individual needs, trust and identification in influencing individuals' intention to stay in the community, willingness to help others, willingness to spend money or time in the community. It is supported by this research that individuals' needs largely determine their participation intentions. Furthermore, members' perception of trust and identification in the VC also influence their behaviors to a certain extent. We hope that our research would instigate future research of a larger scale on individuals' behaviors in VCs.

9. References

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Appendix: Items for the survey instrument

Social Needs (adopted from [5]):

SOC1 I joined XYZ community to interact with others.

SOC2 I joined XYZ community to make new friends.
SOC3 I joined XYZ community to know more people.
SOC4 I joined XYZ community to be closer to friends.

Self Expression Needs (adopted from [39])

EXP1 I joined XYZ community because I feel my homepage presents myself.

EXP2 I joined XYZ community because it allows creative expression of myself.

EXP3 I joined XYZ community because I feel whatever I have done in this XYZ community represents my accomplishment.

EXP4 I joined XYZ community because it is a source of my confidence.

EXP5 I joined XYZ community because it symbolizes personal history of myself.

Trust (adopted from [47])

TRU1 Most people in XYZ community are basically honest.

TRU2 Most people in XYZ community are trustworthy.

TRU3 Most people in XYZ community are basically good and kind.

TRU4 Most people in XYZ community are in general reliable.

TRU5 Most people in XYZ community are sincerely concerned about others.

Identification (adopted from [13] and [23])

IDEN1 I feel great to be a member in XYZ community.

IDEN2 I find it easy to identify myself with XYZ community.

IDEN3 I feel a sense of belonging towards XYZ community.

IDEN4 I am proud to be a member of XYZ community.

IDEN5 I would feel good if I were described as a member of XYZ community.

Dependent variables are measured by:

DEP1 I have the intention to stay in XYZ community.

DEP2 I am willing to help others in XYZ community.

DEP3 I am willing to spend time in XYZ community.

DEP4 I am willing to spend money in XYZ community.

*: XYZ was replaced with the actual name of the virtual community in the survey.