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**Identification vs. self-verification in virtual communities (VC): theoretical gaps and design implications**

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Identification vs. Self-verification in Virtual Communities (VC): Theoretical Gaps and Design Implications

ABSTRACT
Identity-related processes have been identified as important in explaining virtual community (VC) member behavior as well as informing system design of VCs. In particular, the two distinct identity processes of self-verification and identification have been identified and investigated separately, portrayed as two distinctive or contradictory identity processes with different practical implications. This chapter compares and reconciles these two theoretical perspectives in explaining VC participation. Based on a critical and comprehensive review of prior literature, the author identifies three major theoretical gaps that suggest how VC research and management can be advanced through an identity perspective. Finally, the chapter is concluded by discussing key implications of applying identity perspectives in VC research and future research agenda.

INTRODUCTION

Virtual communities (VCs), sometimes called online communities, describe the mediated social spaces in the digital environment that allow groups to form and be sustained primarily through ongoing virtual communication processes (Bagozzi & Dholakia, 2002). Much evidence has shown their potent influence in bringing together far-flung, like-minded individuals (Hagel & Armstrong, 1997) and their commercial and/or social values (Gupta & Kim, 2004). A growing number of companies are building VCs to facilitate peer-to-peer help, foster new ideas and innovation, and build knowledge competencies. VCs are also used to reap the knowledge located in customers. Many firms are hosting online user communities to collect feedback and ideas and to strengthen their innovation process. Additionally, VCs have emerged to leverage the knowledge embedded in professionals, e.g., open-source communities and communities of practice. Such communities are sustained by their members’ voluntary participation to generate content (Lee, Vogel, & Limayem, 2003). Thus, a key challenge for most VCs is to ensure on-going participation.

Prior research in information systems has demonstrated Identity-related processes to be important in explaining VC member behavior as well as informing system VC design. Particularly, two distinct identity processes have been discussed, e.g., identification and self-verification. Identification means that the individual defines him/herself in terms of the membership in the group. The resulting perceptions of oneness with or belonging to the group provide a more autonomous motivation resulting not only in a higher quality of engagement (e.g., greater persistence, effort) but also in more positive experiences such as enjoyment, sense of purpose, and well-being (Ryan & Deci, 2001). In contrast, self-verification assumes that stable self-views provide people with a crucial source of coherence, an invaluable means of defining their existence, and guiding social interaction (cf. Swann Jr., Rentfrow, & Guinn, 2003). Thus, people are motivated to validate and confirm their self-concepts,
even when those self-concepts are negative (McNulty & Swann Jr., 1994), which also drives member participation and active social exchange in VCs (Chan, Bhandar, Oh, & Chan, 2004; Ma & Agarwal, 2007). Different from identification that reflects influences exerted from the collective; self-verification focuses on the communication of self-concepts defined by individuals.

In most IS research, identification and self-verification have been investigated separately and portrayed as two distinctive or contradictory identity processes with different practical implications. Research on identification usually emphasizes the collective influences and anonymity of individuals and agrees that the salient personal identity would undermine the identification with the collective (Postmes, Spears, & Lea, 1998). But research on self-verification argues for making personal/role identity salient and recognized (Ma & Agarwal, 2007). While identity confirmation emphasizes an individual’s self-concept; most prior studies on identification assume antagonism of individuality in the formation of identification, and agree that the salient personal identity would undermine the identification with the collective (Postmes et al. 2000).

Since VCs usually integrate various IT features which may incur complicated community dynamics with diversified social psychological consequences, it is likely that both identity processes co-exist to influence VC members’ interaction within VCs. Thus, it is necessary to examine these competing identity processes simultaneously in driving community participation and informing system VC design. Moreover, integrating these identity processes will offer a more holistic understanding about group dynamics in VCs, which entails important managerial implications.

In this chapter, the author will compare and reconcile these two theoretical perspectives in explaining VC participation. The main objective of this chapter is to inform how VC research and management can be advanced from identity perspectives. This chapter is organized as follows. The following two sections provide a thorough review of two research streams: identification and self-verification. Theoretical models and empirical work in organizational, community, and general group contexts are identified and discussed. Although limited research has been conducted in the context of computer-mediated communication (CMC), prior research from multiple disciplines in different physical settings may provide insights in understanding identity processes in VCs. The following section summarizes and analyzes prior literature, and three theoretical gaps are identified and discussed. Finally, the chapter concludes by discussing the key implications of applying identity perspectives in VC research and a future research agenda.

**IDENTIFICATION: SOCIAL INFLUENCE FROM THE COLLECTIVE**

Traditionally, research on identification has been dominated by the perspective of social identity theory and self-categorization theory (Bergami & Bagozzi, 2000). According to these theories, identification means that a person comes to view him- or herself as a member of a particular social entity (e.g., ethnic groups, gender groups, organizations or artificial groups) through cognitive processes of social comparison and categorization. It is necessary to note that some studies consider identification as a cognitive state of self-categorization while others define it as the process of comparison of personal attributes with organization attributes. However, it is important to differentiate identification as a cognitive state from its antecedents and effects as the comparison processes may not be the only antecedents for the development of self-categorization (Bergami & Bagozzi, 2000). Hence, in this chapter, identification is used to refer to the cognitive state while the term “identification process” will be used for the related identity processes.
A similar term used in prior studies is social identity salience. Although some researchers consider it exchangeable with identification, the literature on identification formation tends to differentiate social identity salience and strength of identification (Forehand, Deshpande, & Reed, 2002). Strength of identification is an enduring association between an individual’s sense of self and his or her identity, whereas identity salience is the momentary activation of a particular social identity. Since the main purpose of VC design and management is to obtain the long-term commitment from individual members, a strong and enduring association is preferred. In this chapter therefore, identification refers to the enduring cognitive state of self-categorization.

Social Identity Theory and Self-Categorization Theory

The notion of identification with a social category (e.g., gender, occupation, organizations, more short-lived and transient groups) is most often discussed by those who draw on social identity theory and self-categorization theory (M. A. Hogg & Abrams, 1988; Turner, 1991). The next section reviews these two theories.

- Social Identity Theory
  Social identity was first proposed by Tajfel (1972) and refers to “the individual’s knowledge that he belongs to certain social groups together with some emotional and value significance to him of this group membership” (p292). Assuming that a system of social categorizations can create and define an individual’s own place in society, social identity is used to explain how self is conceptualized, based on intergroup comparisons. Further, social identity theory also posits that each individual strives to achieve a positive social identity. This implies that social comparison between in-group and salient out-group(s) aims at the establishment of a positive distinctiveness of the in-group compared to the other out-groups.

  Following social identity theory, self-concept or “the totality of self-descriptions and self-evaluations subjectively available to an individual” (Hogg & Abrams, 1988) p24) encompasses two conceptual distinctive parts: 1) personal identities based on idiosyncratic characteristics, e.g., personality traits, and 2) social identities derived from salient group classifications (Tajfel & Turner, 1986). It should be noted that the conceptual distinction between individual-based and group-based aspects of the self is not accompanied by the consistent position on vocabulary. Terms for group-based aspects of the self also include collective, and allocentric; while the individual-based aspects of the self are also termed as individualistic, private, and idiocentric.

- Self-Categorization Theory
  Self-categorization theory was proposed by Turner (1985) and his colleagues (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) as an extension of social identity theory. In this theory they specify in detail how social categorization produces prototype-based depersonalization of self and others and thus generates social identity phenomena. Self-categorization or social categorization of self is a cognitive process whereby self is assimilated to the in-group prototype and depersonalizes self-conception, i.e., self is no longer represented as ‘unique individual’ but as an embodiment of the relevant prototype. Once identified with a social category, the individual tends to define him-or herself in terms of the defining features of the social category which renders the self stereotypically “interchangeable” with other group members, and stereotypically distinct from outsiders (Hogg & Abrams, 1988). Accordingly, Ashforth and Mael (1989) define identification as the “perception of oneness with or belongingness” to the social category; Dutton et al. (1994) consider identification as
“a cognitive connection between the definition of an organization and the definition a person applies to him- or herself.” Later Ellemers et al. (1999) proposed that one’s social identification comprises three components: 1) a cognitive component or self-categorization, referring to a cognitive awareness of one’s membership in a social group; 2) an evaluative component or group self-esteem, referring to a positive and negative value connotation attached to this group membership; and 3) an emotional component or affective commitment, referring to a sense of emotional involvement with the group. Prior research has demonstrated the construct validity for this three-dimensional conceptualization (Bergami & Bagozzi, 2000).

According to self-categorization theory, one crucial determinant of social identification is the fit between a social categorization and reality in both its comparative and normative aspects (S. Alexander Haslam, Oakes, Reynolds, & Turner, 1999; P. J. Oakes, 1987). Comparative fit means a set of stimuli is more likely to be categorized as a single entity when the intraclass differences between those items are seen to be smaller than the interclass differences between those items and others that are included in a given comparative contexts. Normative fit refers to the content-related aspects of the match between category specification and the instances being represented. In addition, both types of fit determine social identification in interaction with perceiver readiness or cognitive accessibility (P. J. Oakes, 1987). Accessibility is the readiness of a given category to become activated in the person. It is a function of the person’s current tasks and goals and of the likelihood that certain objects or events will occur in the situation (P. J. Oakes, Haslam, & Turner, 1994). This means that people are more likely to define themselves in terms of a particular identity to the extent that it has prior meaning for them and it matches subjectively relevant comparative and normative features of reality. Thus, this theory means that context plays an important role in making certain aspects of the self salient, leading to a dynamic and fluctuating self-definition.

Identification in Physical Settings

Traditionally, social identity theories have been applied in 1) artificial groups where people are assigned randomly to treatments (e.g., (N Ellemers, et al., 1999); 2) categories where people are grouped according to social or demographic attributes, e.g., gender, race, ethnicity, religion, occupation, (e.g., (Ether & Deaux, 1994); 3) naturally occurring small groups such as sororities (e.g., (E. R. Smith & Henry, 1996); and 4) working organizations (e.g., (Ashforth & Mael, 1989; Bergami & Bagozzi, 2000). However, the amount of research on how people develop identification with a collective or antecedents of identification is far less than that examining the effect of identification. As the objective of this chapter is to understand identification as an identity process in VCs, the literature review is focused on identification formation in different physical settings, which is believed to provide valuable insight on understanding the similar phenomenon in VCs.

It should be noted that in some prior studies, identity salience and strength of identification are used interchangeably. As the focus of this research is the strength of identification, the studies using identity salience will be included in the review only when the construct definition and measures indicate the synonymy with the concept of identification in this research. In the following section, the major theoretical development and related empirical studies in organizational, community and general group settings are reviewed.

- Organizational Identification: Comparison Models

As suggested by the self-categorization theory, identification stems from a member’s assessments of the fit between his or her categorizations of the organization and his or her self-categorization
(Foreman & Whetten, 2002). A comparison approach is therefore employed and four types of comparison identified in prior studies, i.e., perceived organizational identity vs. self-definition (Dutton, et al., 1994), organizational identity elements vs. member expectations (Whetten, Lewis, & Mischel, 1992), social identity vs. self-identity (Ashforth & Mael, 1989), and current organizational identity vs. ideal organizational identity (Reger, Gustafson, DeMarie, & Mulanne, 1994).

Of the four types of comparison, the theory proposed by Dutton et al. (1994) has been empirically tested and recently also extended to investigate the customer-company identification (Bhattacharya & Sen, 2003). Dutton et al. (1994) argue that two key organizational images influence the strength of individuals’ identification with their organization, i.e., their perceptions of the organizational identity and their beliefs about how outsiders view their organization. The strength of a members’ organizational identification reflects the degree to which the content of the member’s self-concept is tied to his or her organizational membership. When organizational identification is strong, a member’s self-concept has incorporated a large part of what he or she believes is distinctive, central, and enduring about the organization into what he or she believes is distinctive, central and enduring about him- or herself.

Organizational identity is shaped by the organization’s goals, missions, structure, practices, values and action that are central to the organization, distinctive from other organizations, and relatively enduring over time (Scott & Lane, 2000). The perception of organizational identity helps individuals understand the question: “What does this organization stand for?” An organizational identity is perceived as attractive when it satisfies one or more self-definitional needs, i.e., self-continuity, self-distinctiveness, and self-enhancement (Dutton, et al., 1994). Then the attractiveness of the perceived identity leads to stronger organizational identification.

Moreover, Dutton et al. (1994) suggest that the attractiveness of a construed organizational image also influences the strength of organizational identification. Constrained external image refers to a member’s (insider’s) beliefs about outsiders’ perceptions of the organization, which is different from organizational reputation defined as the “outsider’s” beliefs about what distinguishes an organization. A construed external image tells the member how outsiders think of him/her if this person associates with this organization (Dutto et al 1994). As a powerful reflection of public opinion, a construed external image strengthens members’ organizational identification when perceived as attractive, i.e., members believe the image contains attributes that distinguish an organization in positive, socially valued terms.

This theory was empirically tested by Dukerich et al. (2002) in investigating the cooperative behavior in the context of health care systems. They surveyed 1,504 physicians and collected follow-up data from 285 physicians a year later. The results provided the robust support for the Dutton et al.’s theory (1994) but also suggested that the mediating effect of identification vary for different target behaviors.

This model has also been extended to informal membership contexts to examine customer-company (C-C) identification (Bhattacharya & Sen, 2003). In their extension, two moderators were identified for the link between perceived identity attractiveness and C-C identification, i.e., embeddedness and salience. Embeddedness places consumers closer to the center of the social network embodied by the company, making them feel more integrated in the network (O’Hara, Beehr, & Colarelli, 1994). It also makes it easy and important for customers to categorize themselves socially in terms of the company’s identity. Another moderator is identity salience, or the extent to which specific identity
information dominates a person’s working memory. Identity salience could be heightened by factors such as the intensity of the company’s efforts on corporate image communication. Specifically, initiatives such as corporate advertising and public relations not only educate consumers about the company’s identity but also make it more salient relative to other competing social identities. Identity salience is incorporated into the C-C identification model because the variation among consumers in the extent to which the company identity is accessible is much greater than that in the employee-employer context.

Later Ahearne et al. (2005) operationalized the C-C identification model and identified an external image of the company, perceived salesperson characteristics and perceived company characteristics as the antecedents for customer-company identification. They argued that the favorable perceptions of the customer would lead to a strong identification with the company. They surveyed 178 physicians for their perception of and identification with a pharmaceutical manufacturer. The study showed that the surveyed physicians did identify with the company and that identification had strong and positive consequences both in terms of in-role (e.g., product utilization) and extra-role (e.g., word-of-mouth) behaviors. The authors also demonstrated that identification was influenced by the customers’ perception of both the company as well as the boundary-spanning agent.

Different from Dutton et al.’s (1994) model, the model proposed by Reger et al. (1994) argues for the comparison between current organizational identity and the ideal organizational identity, from which organizational identification is developed. The “preferred”, “expected” or “ideal” organizational identity essentially acts as an extension of the members’ self-identity. The greater gap between these two identities will lead to a low identification with the organization. Later, Foreman et al. (2002) applied this model to understand the identification in multiple-identity organizations. Two organizational identities were conceptualized, i.e., normative and utilitarian, with respect to two different value systems. A normative system emphasizes traditions, symbols, internalization of an ideology and altruism; a utilitarian system is characterized by economic rationality, maximization of profits and self-interest. Reger et al.’s empirical study was conducted with 2,000 members of rural co-ops and the main argument in their model was supported.

- Community Identification

Apart from organizations, communities represent another arena to investigate identification and its associated phenomena. Since VCs can be viewed as the online version of physical communities, research on community identification is also an important input for understanding VC identification.

Broadly speaking, a community can be described as a set of people with some kind of shared element, which can vary widely from a situation, such as living in a particular place, to some kind of interest, belief or value. However, defining a community has proven to be more of a challenge. Until now, there remains an essential division between territorial/locality based conceptions of community and those concerned with social/network relationships (Puddifoot, 1995). Lack of a consistent and precise definition of community leads to further confusion regarding community identity and social identification with a community. “Can there be such a thing as identity when applied to community?” and “how might community identity be distinguished from other forms of identity, e.g., personal identity, organizational identity?” (Puddifoot, 1995). Hence, research on community identification has focused mainly on clarifying the construct per se and its relationship with a psychological sense of community (PSOC), another important concept in community research.
PSOC was first proposed by (Chavis, Hogge, McMillan, & Wandersman, 1986) and remains an important construct in community research. It is proposed that PSOC consists of four elements that work dynamically together to create and maintain an overall sense of community (McMillan & Chavis, 1986): 1) Membership which creates feelings of emotional safety with a sense of belonging to, and identification with, the larger collective, 2) influence which characterizes the reciprocal relationship of the individual and the community in terms of their ability to affect each other, 3) Fulfillment of Needs, which enables individuals to get their needs met through cooperative behavior within the community, thereby reinforcing the individuals’ appropriate community behavior, and 4) Emotional Connection which is the emotional support stemming from the struggles and successes of community living. This PSOC model accommodates “community” conceptualized as a geographical territory (neighborhood) and as a relational network (work, political, or recreational interests) (Chipuer & Pretty, 1999).

Although the importance of PSOC is widely acknowledged, little consensus has been reached in theoretical and methodological developments of this construct. Conceptually, researchers still have a lively debate regarding the psychological dimensions underlying PSOC, e.g., a cognition, a behavior, or an individual affective state. Operationally, the ongoing search for a definitive “psychological” construction of sense of community, and for links between it and well-being, has generated several different scales. Moreover, dimensions expressed “theoretically” are not smoothly related to what has been discovered at the operational level. Finally, it has been proposed that “sense of community” or PSOC could actually be “setting-specific” (Hill, 1996; Hughey, Speer, & Peterson, 1999). Thus, some researchers turn to the conceptualization which establishes in detail the locus (e.g., boundaries, physical, and social identifying features) of the community in question or community identity.

Puddifoot (1995) was one of the pioneers to investigate community identity. Inspired by a series of surveys about residents’ opinions regarding the preferred form of future local government as well as prior research on PSOC, social cohesion, and community satisfaction; Puddifoot (1995) developed a taxonomy for community identity. In this taxonomy, dimensions referring to the first of six elements, locus, pertain to the perception by community members of the boundaries of their community, its key physical, environmental, and built features, and patterns of social-cultural relations. The dimensions of the second element, distinctiveness, refer to the perceived relative distinctiveness of one’s community, and the third, identification, denote a sense of affiliation, belongingness, and emotional connectedness. Dimensions pertaining to the fourth element, orientation, express the personal orientation of the individual to his/her community, that is, the individual’s degree of personal investment in the community, attraction to the community, perceived future in it, sense of emotional safety, personal involvement, or sense of alienation from the community. The last two elements are concerned with evaluation of the quality of community life and evaluation of community functioning, e.g., the provision of community services.

In a recent empirical study, Puddifoot (2003) extended this conceptualization to incorporate community features shared by the general others. It is reasoned that only when a common ground is established, does it become reasonable to suppose that the aggregation of many individual responses might lead to a meaningful characterization of the identity of that community. In this study, six factors were identified for sense of community identity: sense of personal support, sense of personal contentedness, sense of personal involvement, perceived community engagement, perceived neighborliness, and perceived settledness. Empirical evidence also demonstrated that
sense of community identity should be treated as distinct from PSOC. Moreover, sense of community identity was shown to have a better psychometrical quality than the scales for PSOC.

Only recently, community researchers started to explore the utility of using a social identity theory framework to understand the relationship of community identification to PSOC. It is suggested that differences in levels of PSOC may be understood in terms of the degree to which members identify with their community. Smith et al. (1999) examined PSOC and in-group identification with one’s neighborhood, incorporating social identity theory measures of identification as well as traditional PSOC measures. Identification emerged as distinct from other PSOC dimensions and was also a significant predictor of overall sense of community. Cameron (2004) further developed a three-dimensional model of social identification with a community: centrality, which is the cognitive prominence of a given group membership; in-group affect, the emotional evaluation of that group membership; and in-group ties, the perception of similarity and bonds with other group members. Obst and her colleagues conducted several empirical studies to explore the interplay between PSOC and identification and reported that identification emerged as a separate dimension of PSOC in both geographical and relational communities (Obst, Zinkiewicz, & Smith, 2002; P. L. Obst & K. M. White, 2005). In one recent study, Obst and White (2005) examined separate dimensions of social identification as predictors of PSOC and accounted for the factor of context salience. The results indicated that in-group tie was consistently the strongest predictor of PSOC and that the strength of in-group Affect and Centrality varied for the group or community context. The authors implied that identification and PSOC, although strongly related, may examine different aspects of community processes.

- Determinants for Identification

Most studies on social identity theories have been conducted in general group settings, where various factors that may influence the development of identification with the referent group are explored. Some are related to the nature of groups, e.g., status, stability, permeability, and legitimacy (see Mullen, Brown, & Smith, 1992, for an overview); while others are individual motivational factors, e.g., individual distinctiveness (Brewer, 1991) and uncertainty reduction (Hogg & Abrams, 1993). This section will review the factors that affect the development of social identification.

Group distinctiveness in the form of relative status has been cited as one of the most important factors driving social identification because “positively valued distinctiveness” is usually regarded as the goal of social comparison (Tajfel 1972). High status groups serve to enhance individuals’ self-esteem and therefore are favored in social comparison and categorization. Ellemers et al. (1992) demonstrated empirically that individuals assigned to high-status groups identified more strongly with the groups than did people in low-status groups.

Prior research suggests that the structural variable --- relative group size --- is another important factor for developing identification with the group. More specifically, it is assumed that being a member of minority group poses a threat to a person’s self-esteem. Since social identity theory posits that each individual strives for a positive self-esteem, one way to enhance the minority group members’ self-esteem is to perceive more in-group homogeneity and to identify more strongly with their group (Bernd Simon & Brown, 1987). But sometimes the numerical distinctiveness can also serve to enhance self-esteem. According to optimal distinctiveness theory (Brewer, 1991), people are driven by two basic needs, i.e., the need to belong and the need to be different. While providing assimilation to a collective, small groups offer a higher level of distinctiveness than do larger groups.
Brewer and Weber (1994) found evidence that minority in-group members display more intergroup comparisons, whereas majority in-group members display interpersonal comparison.

Associated with group distinctiveness, boundary salience has been demonstrated as a main factor to influence self-categorization. Brewer’s (1979) review of the experimental research on intergroup bias reveals that one major consequence of social identification, is that intergroup bias (e.g., reward allocation or evaluation) increases as the salience of the boundary between the in-group and out-group increases. In some extreme cases (e.g., gender group, ethnic/racial background) the boundary is ascribed and usually impermeable. Such groups are typically homogeneous and their members tend to develop a strong subjective identification with the groups (Deaux & Martin, 2003). In another study, Gaertner et al. (1993) found that intergroup bias can be reduced by transforming group members’ cognitive representations of the aggregate of in-group and out-group members from a “two groups” representation to a more inclusive “one group” representation.

Oakes et al. (1995) have discussed another factor related to the development of identification with a group, i.e., familiarity. They argue that when individuals become more familiar with a group, they are more likely to categorize themselves as the members of the group, which creates a high homogeneity within the group. This is related to the argument of “subjective uncertainty reduction” (Hogg & Abrams, 1993) which assumes that people will feel uncomfortable with uncertainty arising from understanding the world. The need to reduce such uncertainty can be fulfilled by achieving perceived agreement and consensus with others, or identifying with certain social categories. This analysis does not involve intergroup comparison but only emphasizes processes at the individual level.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Formal Organization</th>
<th>Communities</th>
<th>General Social Groups</th>
</tr>
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<tbody>
<tr>
<td><strong>Characteristics</strong></td>
<td>Legitimate and visible organizational boundaries; Existence of organizational identity</td>
<td>Physical boundaries may exist and visible; Existence of community identity may be debatable.</td>
<td>Based on existing social categories (e.g., gender, ethnic)</td>
</tr>
<tr>
<td><strong>Constructs/Theories</strong></td>
<td>Comparison approaches based on social identity theories: 1. perceived organizational identity vs. self-definition 2. organizational identity elements vs. member expectations 3. social identity vs. self-identity 4. current organizational identity vs. ideal organizational identity Only the first one was empirically validated.</td>
<td>Psychological sense of community; Community identification</td>
<td>Social identity theories</td>
</tr>
<tr>
<td><strong>How People develop</strong></td>
<td>An attractive organizational identity that satisfies one or more</td>
<td></td>
<td>Determinants of identification:</td>
</tr>
<tr>
<td>Identification /Determinants for identification</td>
<td>self-definitional needs, i.e., self-continuity, self-distinctiveness, and self-enhancement, will lead to high identification.</td>
<td>nature of groups, e.g., status, stability, permeability, and legitimacy</td>
<td>Individual characteristics e.g., individual distinctiveness and uncertainty reduction.</td>
</tr>
</tbody>
</table>

To sum up, the research reviewed above reveals several group and individual factors that may affect identification development (see Table 1). In order to strengthen the member’s identification, the group/collective should have a clearly defined boundary to separate it from the other groups. A distinctive group, in forms of either relative number or status, will have more chances to have highly identified members. Finally, identification may also result from the need to reduce uncertainty. People tend to identify with whom they are familiar with.

**Identification in Computer-Mediated Communication (CMC)**

While most identification research has been done in physical settings, some researchers have started examining this phenomenon in the context of CMC. As is known, CMC is different from face-to-face communication in many ways, e.g., limited synchronicity of interaction, free from space and time dependencies. Most explanations of media effects in CMC, however, focus on the reduced capacity of CMC to convey social information about communication partners, e.g., reduction in “social cues” (Tanis & Postmes, 2003), anonymity (Douglas & McGarty, 2001), and deindividuation (Postmes, et al., 1998), which is expected to affect individual behaviors and social influences. This idea also inspires the study of identification in the context of CMC.

Traditionally, CMC is known for giving people strategic freedom to express themselves due to anonymity and unaccountability. In extreme cases, the communicator is deindividuated or being deprived of awareness of the individual identity of the self and of the others (Hiltz, Turoff, & Johnson, 1989). The resulting effects of deindividuation in CMC are identical to disruptive effects suggested by theories of deindividuation in social psychology (Postmes & Spears, 1998): decreased awareness of the social environment and of the self leads to decreased adherence to social norms. In contrast, an account of the consequences of varying identifiability (which may be termed as “deindividuation manipulations”) has been offered from the social identity perspective, i.e., Social Identity Model of Deindividuation Effect (SIDE; Postmes, et al., 1998; Spears, Lea, Cornelissen, Postmes, & Haar, 2002). According to this theory, deindividuation manipulations have consequences for the relative salience of personal and social identities. Factors that have traditionally been identified as causing deindividuation, such as the combination of anonymity and group immersion (Zimbardo, 1969) or interaction via a computer network (Jessup, Connolly, & Tansik, 1990), do not lead to the loss of identity but rather to enhance salience of social identity. Correspondingly, the observation that there is a loss of internal control over action under deindividuation manipulations is actually due to the strengthened control from those standards inherent with the relevant social identification. This is because the relative lack of individuation in CMC smoothes the difference among the group members. Motivated to reduce the uncertainty in social interaction, members tend to be more sensitive to any salient social identity cues and over-attribute them to group members, leading to an extenuated similarity and unity of the group and causing people to be perceived as group members rather than idiosyncratic individuals (Lea, Spears, & de Groot, 2001). In short, the
deindividuation gives rise to a strong social identification in the context of CMC. Foil and O’Conner (2005), based on SIDE, even advocate the usage of lean media with high role clarity and team legitimacy in order to develop identification in virtual teams.

Summary
This section has presented the concept of identification and the related research on identification formation. Prior research on identification following social identity theory and self-identification theory emphasizes the influences from social identities. People develop identification with a social entity via depersonalization. Although identification formation has been discussed in both physical and virtual settings, research on this topic is still in its infancy. Research on organizational identification has proposed several theoretical models but lacks empirical validation. The understanding of community identification is still at the elementary stage, and the conceptualization needs further clarification. In the virtual setting, only one technological factor, identifiability, was examined from the social identity perspective. Although prior research in various settings has provided insight on VC identification, further theoretical and empirical development is of more imperative. In the following section, prior research that emphasizes the influences from personal identities or individuality will be reviewed.

THE ROLE OF INDIVIDUALS IN GROUPS

Readings of social identity theory and self-categorization theory have led researchers to draw the conclusion that identification will necessarily lead to depersonalization and interchangeability of individual group members and ultimately lead to increased perceptions of cohesion. This idea is implicit in the interpersonal-intergroup continuum, which treats personal identity and social identity as polar opposites (Tajfel, 1978). As reviewed in the previous sections, most prior research on identification typically considers individuals and groups as representatives of antagonistic forces, that is, the expression of personal identity as being mutually exclusive with developing strong social identification, e.g., SIDE model.

Such a social deterministic view neglects the fact that the collective typically benefits from heterogeneity and individual creativity, as illustrated by the classic community where solidarity co-exists with a successful division of labor (Postmes, Haslam, & Swaab, 2005). Actually, individuality and personal identity expression have been recognized as an important component in many collective actions. For instance, the explicit expression of personal identities of employees is argued to counteract the negative consequences of superordinate identities (Haslam, Eggins, & Reynolds, 2003). Another example is the dual concern model (Pruitt & Carnevale, 1993; Pruitt & Rubin, 1986) in which the success of any negotiation process is seen to depend on an ability to take the perspective of, and show concern for, both self and others. Rich evidence has been documented to support the positive roles of recognition for individuality as an important mechanism to elevate desired behaviors (e.g., participation) and create favorable social consequences for the contributor (e.g., high self-esteem) (Blau, 1964; Fisher & Ackerman, 1998).

Self-Verification Theory and Identity Confirmation
In the tradition of the symbolic interactionists (e.g., Cooley, 1902; Mead, 1934), people are assumed to have a fundamental desire to know what to expect from their worlds (cf. Swann Jr., 1983). This need is associated with a strong tendency to seek self-confirmatory evidence for the self-concepts (Swann Jr. & Read, 1981). Self-verification theory (Swann Jr., 1983) assumes that stable self-views
provide people with a crucial source of coherence, an invaluable means of defining their existence and guiding social interaction (cf. Swann Jr., et al., 2003). Thus, people are motivated to validate and confirm their self-concepts, even when those self-concepts are negative (McNulty & Swann Jr., 1994). In doing so, people allow others or encourage others to see them as they see themselves, a process which helps to obtain coherence in mental and social life and ensures the social interaction unfolding smoothly. Identity confirmation, then, refers to a state that exists when an individual’s social environment is consistent with his or her “self-identities” and is conceptualized in terms of congruence between how a group member defines him- or herself and how other group members define that person (Milton & Westphal, 2005). In contrast with the social identity approach where the group shapes individuals’ self-views, self-verification theory argues for the active role of individuals in shaping their actual and perceived experiences within groups.

Two classes of self-verification activities have been proposed in the search for self-verifying evaluations. Behaviorally, people systematically communicate self-views to fellow members in order to ensure that the evaluations they receive will confirm their self-views. Such activities include displaying identity cues (e.g., clothes and postures), selective interaction and/or resisting discrepant feedback. In the second class of activities, cognitively people use their self-views to guide the selection, retention, and interpretation of their experiences in groups (Swann Jr., et al., 2003). Prior research has shown that identity confirmation via interpersonal congruence leads to positive outcomes in intimate and social relations (Broxton, 1963; Swann Jr., De La Ronde, & Hixon, 1994) and in MBA study groups (Polzer, Milton, & Swann, 2002). Recently, Milton and Westphal (2005) demonstrated that a social network embedded with identity confirmation ties can enhance cooperation in work groups.

**Identity Confirmation in CMC**

CMC provides individuals with another space for exploring new identities and/or extending existing identities (Donath, 1999). Although direct application of self-verification theory is still rare, the notion of identity confirmation has been widely applied in prior research on individual behavior in CMC, e.g., virtual team or VCs. For instance, Hars and Ou (2002) demonstrated peer recognition for the focal person’s contribution as a form of extrinsic reward for participating in VCs, leading to a high dedication to open source programming. Chan et al. (2004) further identified different forms of recognition, i.e., identity, expertise and tangible recognition, and reported the positive linkages between recognition and VC participation.

Another construct of respect, reflecting peers’ judgments about their status within the group, has also been demonstrated to influence the aspects of behavior that flow from concerns at the individual level (Tyler & Smith, 1999). In particular, those who feel respected work harder and display more voluntary behavior that is considered to be helpful for the group (Doosje, Ellemers, & Spears, 1999). A similar term, reputation, is also used to mean an individual’s recognition as a valuable member among the members of the expertise-sharing network (Franke & Shah, 2003; Tiwana & Bush, 2005). As building reputation takes time and effort and reputation is also valuable for individuals, people tend to exhibit reputation-preserving behavior, a tendency to safeguard and preserve developed reputation. Supporting evidence has been reported among Ebay users (Arkes & Blumer, 1985), as well as members of e-mail groups (Owens, Neale, & Sutton, 2000). Recently, Ma & Agarwal (2007), relying on self-verification theory, proposed that consonance between the focal person’s self-concept and the others’ perception of the focal person would enhance the focal person’s knowledge contribution to, and satisfaction with a VC.
Individuality in Identification

Given the value of individuality in collective action, researchers following social identity theories have begun to question the traditional antagonistic view towards personal and social identities and thus are beginning to understand the role of individuality or personal identities in identification formation. Three theories will be reviewed below.

- Actualizing Social and Personal Identity Resources (ASPIRe model)

  Proposed by Haslam et al. (2003), this model represents an initial attempt to demonstrate how social and personal identity resources might be assessed and utilized by organizations in an attempt to measure and make the most of their social capital. Key features of this theory are 1) identities must be accepted as self-relevant and self-defining by employees rather than being imposed upon them, 2) where they make an important contribution to employees’ self-concept, organizations must allow subgroup identities to be voiced and to have an impact on higher-level decisions, and 3) a range of positive organizational outcomes are contingent upon an ability to develop shared goals and a shared identity that is premised upon lower-level goals relevant to the personal and subgroup identities of employees.

  Based on the assumptions above, Haslam et al. (2003) postulate four temporal stages. The first is “Ascertaining Identity Resources” (AIRing). In this stage, organizations need to identify those self-categorizations that are seen by employees as most relevant to their ability to do their work and to distinguish these from identities that are not perceived to be self-relevant. Relevant identities would differ dramatically not just between organizations whose core business is quite different, but also between different organizations with the same core business and even the same business at different times.

  The second stage is called “Subgroup Caucusing” (Sub-Casing). This stage is used to allow each of the subgroups identified at the end of the AIRing phase to engage in internal discussion and debate so that members can not only identify and agree upon shared goals, understand structural and other barriers in achieving those goals, but also identify and internalize the shared identity that is relevant to these goals. Within subgroups that participate in Sub-Casing, there would be evidence of more trust, superior communication, more enthusiasm and more creativity than within subgroups that do not go through this process.

  The third phase is “Superordinate Consensualizing” (Super-Casing). As the goals identified in the previous stage may be quite diversified or polarized, the main task of this phase is to provide a common organizational forum that brings together the different subgroups to engage in further discussion and debate. The resulting social identity is different from that which is informed in the initial AIRing phase in so far as it builds upon the explicitly recognized subgroup identities that emerged during Sub-Casing. While the social identity that underpinned the AIRing phase may be relatively mechanical, the organizational identity that emerges in Super-Casing is more organic, i.e., its content defines the superordinate group in a way that allows for and incorporates subgroup difference.

  The final phase is “Organic Goal-Setting” (ORGanizing), where organizations need to capitalize on the outcomes of the previous three phases. This process focuses on evaluating the appropriateness for the organization of the superordinate goals that emerged from Super-Casing. Members’
participation is expected as they will be more likely to have a sense of ownership of the organization’s decisions, goals, and plans and to perceive them to be fair and appropriate.

- **A Model of Individuality in Social Identity**

To reconcile the expression of individuality with the formation of social identification, Postmes et al. (2005) proposed a model of individuality in social identity. This model is built upon the notion of organic solidarity (Durkheim, 1984). In his original work, Durkheim suggested that solidarity can arise out of differentiation within the group, between individuals (and sub-groups), and out of the roles, attributes, and skills that those individuals bring to the collective. In other words, both individualism and collectivism may serve as a means to achieve solidarity. By extension, Postmes et al. (2005) argue that identification with a social entity can be deduced not only from the superordinate identity but also from the expression of individuality. In this sense, identification formation is conceptualized along the continuum. On the one end, members recognize and share a certain common attribute that is given meaning at a supraindividual level and within an intergroup context. Such groups can be characterized as having a more or less deductive social identity (cf. Turner, 1982). Along a second continuum, identification can be formed from the bottom up through communication and also be inferred from expressions of individuality (cf. Sassenberg & Postmes, 2002). Such groups can be characterized as being formed more or less inductively (cf. Turner, 1982). Both paths can generate equally strong social identification, but individuality plays a more central role in the inductive identification and a more peripheral role in the deductive identification.

Postmes et al. (2005) also point out that inductive identification does not occur in all groups; rather, its significance in identification development is contingent upon the group characteristics. In this study, they compared the two types of groups, i.e., common-bond group vs. common identity group. Common-bond groups are formed based on interpersonal relationships with mutual bonds among the members who are identifiable to each other, e.g., friendship groups. Common identity groups, on the other hand, are formed based on the shared superordinate identities. Examples of such groups can be found in those contexts where a group is part of a clearly defined larger (inter)group context, and where the overarching identity or intergroup context is obvious and pertinent. In the experiment, they demonstrated that equally important social identification was generated through either the inductive path in a common-bond group or the deductive path in a common-identity group.

- **Optimal Distinctiveness Theory**

This theory was first proposed by Brewer (1991, 1993) in order to reconcile individuality in social identity. According to this theory, people are driven by countervailing drives for distinctiveness and inclusiveness, such that in large, overly inclusive groups, individuals will be motivated to achieve greater distinctiveness. Similarly, if people's needs for distinctiveness are overly indulged, then they will be driven to seek inclusiveness in a social group. People's strongest group identities, then, should be with those groups that provide an optimal balance between inclusiveness and distinctiveness. Hornsey and Jetten (2004) further elaborated on several strategies that can be used to balance the need to belong and to be different. For instance, identification with numerically distinct groups or groups that are strongly differentiated from the mainstream will bring a sense of belonging and distinctiveness at the same time. But in a large scale group, people tend to differentiate themselves from the others within the group and still remain loyal. Suggestive empirical evidence of the compatibility of group formation and individualization processes has been found in minority-majority intergroup contexts. For instance, Simon, Aufderheide, & Hastedt (2000) showed that for majority members, group-level information
processing, a common indicator of group formation, increased when individuation was made possible by way of preceding self-description tasks. Kempmeier and Simon (2001) further proposed two components of individuality, i.e., differentiation (or distinctiveness) and independence (or self-determination. Their empirical study revealed two moderators for such compatibility. The first one is group size. Minority group formation is more compatible with individuation in terms of differentiation than with individuation in terms of independence. But they failed to find the opposite effect for majority group formation. The second moderator is members’ comparison orientation, either intergroup or intragroup. Group formation was generally more compatible with individuation in terms of differentiation (as opposed to independence) when an intergroup orientation was affected, whereas the opposite was found when an intragroup orientation was affected.

Summary
In addition to social identities, personal identity or individuality also serves as an important influence on individual behavior. This section reviewed self-verification theory and associated research on identity confirmation in CMC. This theory was presented as opposing social identity theories because of its emphasis on individuality. However, recent development in research from social identity perspectives shows a converging trend to reconcile the tension between personal identities and social identities, suggesting both identity processes need to be considered in understanding individual behavior within a collective. In the next section, a critical analysis of literature will be offered based on the literature review in section 2 and section 3. Theoretical voids will be identified for further theoretical development and empirical investigation.

CRITICAL ANALYSIS OF LITERATURE

The last two sections have reviewed the main theories and studies on two identity processes. Most prior research following social identity theory and self-categorization theory emphasizes the role of social identity in shaping self-concept and explaining individual behavior while self-verification theory focuses on the active role of individuality/personal identity, suggesting a bottom-up influence on individual behavior. Of more relevance, both identification and identity confirmation have been applied in virtual settings to explain individual behavior. Based on the review, the following theoretical gaps leading to further theoretical development will be discussed in this section.

Identification vs. Self-Verification
Most prior research follows either social identity theories or self-verification theory and examines identification and identity confirmation in isolation. Although put as two distinct perspectives in understanding individual behavior in a group, identification and self-verification are not exclusive. They reflect identity processes operated at two different levels. While identification emphasizes the comparison between self-views and the collective identity, the self-verification perspective focuses on the negotiation between an individual’s identities and the others’ perception of the focal person, operating at the relational level. Any individual in a group is inevitably subject to influences from both the collective and the others. Moreover, they imply that there are two different motivations related to self-view. While identity confirmation emphasizes the demand for stability of self-view, identification suggests motivation for self-enhancement, self-esteem and uncertainty reduction. These motivations, although different, are not necessarily in conflict. Thus, as research in both fields has provided much evidence to support identification/identity confirmation as a significant factor for individual participation in a group, it is natural to question which identity process is more dominant in determining community participation or whether they are equally important.
Berger, Cunningham, & Drumwright (2006) have identified two routes for identity changes in social alliances, a type of corporate social marketing initiative, whereby individuals develop more aligned personal identities and identification with their organizations. Recent development in social identity theories also tries to reconcile the tension between individuality (personal identity) and social identity, e.g., (Haslam, et al., 2003; Postmes, et al., 2005). Researchers suggest more research be needed to understand multiple routes to identity change.

Further, prior research has shown that these two perspectives have distinct implications for community design and management which may undermine each other. For instance, research from self-verification perspective favors the personal identity and encourages self-expression and individuality, which may undermine the process of depersonalization and lead to a low level of identification (e.g., SIDE). On the other hand, reducing identifiability to enhance identification, as suggested in social identity research, may prevent an individual's self-view from getting recognized and confirmed. Therefore, it is important to take a comprehensive view towards identity processes, i.e., examine identification and identity confirmation simultaneously, to fully understand the effects of design factors.

**Organizational Identification vs. Community Identification**

Both organizations and communities are facing the collective action problem, which motivates researchers on both sides to develop similar conceptualization, i.e., identification for organization and PSOC for community, in parallel with little interdisciplinary research. The isolation mainly results from the assumptions about the fundamental differences between the organization and community. Traditionally, communities are considered as naturally “bounded” by chance of birth, proximity of residence, the happenstance of geographic relocation (Bagozzi & Dholakia, 2002) or the spontaneous interests. The informal, organic, and self-organizing nature of communities makes them resistant to supervision and interference, which are very common in formal organizations (Wenger & Snyder, 2000). Another reason for the lack of interdisciplinary research may come from the fact that the term “community” has not entered the business vernacular and become an alternative to formal organizations until recently (Wenger & Snyder, 2000). However, such differences are vanishing with contemporary organizational designs and strategies. For instance, communities of practice are found inside organizations and demonstrated to be a valuable source for cooperation and innovation (Ferran-Urdaneta, 1999; Wenger & Snyder, 2000). Some leading companies also take the leap to cultivate or nurture communities within the organization. As internal and external organizational boundaries are blurring with expanding social alliances and/or cooperative networks (Bartel, 2001), communities are also thriving across organizational boundaries, e.g., customer communities (Hagel & Armstrong, 1997; Williams & Cothrel, 2000).

Thus, there are points at which the organization and community literatures tend to converge and may benefit from interdisciplinary research. First, both identification and PSOC refer to a psychological connection between members and the associated collective. Both literatures assume that membership in an organization/community is not necessary for identification/PSOC to occur. Overlaps exist in the conceptualization of PSOC where identification is considered as one dimension. Despite its narrower scope than that of PSOC, the construct of identification appears to be more rigorous and has received more empirical support than PSOC. Second, recent developments in community research also support the application of social identity theories in understanding community processes. Community identification is demonstrated to be conceptually distinct from
PSOC, and shown to have better psychometrical characteristics as well as explanatory power. Thus, community identification represents a promising direction to converge two literatures.

However, compared to organizational identification research, research in community identification is still in its infancy. First, the conceptualization itself is less developed. Although the distinction between organization and community is reduced, most identification research is conducted in the context of formal organizations or social categories. In such contexts, group boundaries are often demarcated clearly by the organization itself, e.g., administrative titles or functional departments, and a preexisting collective identity can be assumed. However, for the collectives characterized with fluid boundaries and/or relying on the negotiation of members, e.g., communities, will it be possible for members to develop strong identification? And how different will it be from identification in a formal organization context? Second, what has been understudied in both disciplines is how identification can be managed. We still lack the knowledge of the antecedents of identification in general.

Identification Formation: Offline vs. Online
As reviewed in prior sections, both identification and identity confirmation have been applied in virtual settings. What make virtual settings different from their offline counterparts are the influences of IT artifacts on identity management. The design of IT artifacts determines social processes and what individuals can do in presenting and communicating their identities. However, according to the literature review, the influence of IT artifacts has been overlooked in most prior research except for one exception (Ma & Agarwal, 2007). In this study, Ma identified IT artifacts of VC that have impacts on identity confirmation. Although insightful, these conceptualizations favor self-verification over identification. Given the reduced physical contact among members, the cohesion-building consequences of identification with virtual collectives may be especially important for sustaining VC (Wiesenfeld, Raghuram, & Garud, 2001). However, most prior research takes identification as given without investigating its formation. Even though some studies based on SIDE investigate the effect of anonymity, one of CMC characteristics, on identification. What is identified in those studies is usually an existing social category rather than the virtual group or the VC itself. As VCs are increasingly used for commercial purposes, managers need to understand the effective interventions to cultivate identification in virtual settings. More particularly, system design needs to be considered as a major part of such interventions in the future research.

FUTURE RESEARCH AGENDA AND IMPLICATIONS FOR VC DESIGN

To seek a sense of belonging and/or to confirm self-concepts are important social activities in VCs. These identity communication activities are both the means for and one of ends of social interaction. Particularly developing identification is the key to forge a VC. While to support social interaction and to sustain VCs have been considered as one of design objectives, it is indispensable to understand the implications of various IT artifacts on these identity processes.

Furthermore, VC design goes beyond the technical sides and includes institutional design. VC moderators or administrators need to be involved constantly in managing and maintaining online social exchange among members. While most of them practice based on trial & error, it is necessary to make such management activities more informed with explicit objectives. Existing evidence has shown the importance of identification in forging a community. Perhaps shaping the VC identities,
encouraging identification with the VC, and understanding identity dynamics among members should be on the list of VC moderators/administrators’ agenda.

Compared to the other concepts, such as, social presence and awareness, identity processes have not attracted enough attention from design point of view. While most prior studies have focused on understanding the role of identity processes in various user behaviors, our knowledge about identity processes per se, and particularly how they may inform VC design remains limited. Based on the critical review, the authors would like to discuss the following research directors and the associated implications for VC design as summarized in Figure 1.

<Insert Figure 1>

**Identity Processes and VC Design**

Currently, we have witnessed an obvious trend of integration in many kinds of information system design. Especially VC has become a platform integrating various IT features and supporting different human activities. There are two approaches for VC design. One is ethnographic (and ethnomethodological) approaches, as many studies conducted in the fields like Computer Supported Cooperative Work (CSCW). Researchers provide numerous rich descriptions of tasks, problems, people, and work and social settings, which have led to design suggestions and system requirements for new CSCW technology. Prototypes are evaluated empirically but not theoretically (because there was no generalizable theory to test). The result has been perhaps excellent designs but, typically, little sustained work to develop first principles that can be applied elsewhere.

Different from the ethnographic approach is the theoretical approach. The utility of social psychological theories in understanding and predicting individual and group behavior is mined to guide application design. Theories are therefore translated into specific design recommendations and the empirical tests will not only demonstrate the effectiveness of specific design but also confirm the applicability of theories in guiding future design. One example is the social presence theory (Short, Williams, & Christie, 1976), which has been widely used in different contexts. Social presence has been considered as one of design guidelines, which advocates that the design of CMC should be as proximate to face-to-face communication as possible.

Following the theoretical approach, identification and self-verification could be also considered as important theoretical underpinning to inform existing design and to guide future design. This is because a great part of social interaction in VCs involves identification communication either as means or ends. On the one hand, the sense of belonging (identification) or to confirm “who I am” (self-verification) is one of goals of members participating in a VC; on the other hand, existing research has demonstrated that identification and/or confirmed self-concepts are also solutions to problem of under contribution in VCs. Thus, how to design for identity processes should be an inherent in VC design. Specifically, the following research questions should be investigated:

- How should VCs be designed for identification?
- How should VCs be designed for self-verification?

Existing research on how to develop identification in physical setting has provided some useful insight. In order to develop identification with a VC, the VC should have an enduring identity that is attractive to members. What makes a VC identity different from a collective identity in physical settings is that all defining attributes of a VC identity are presented and communicated through
websites. Thus, the VC designers have an active control over what VC identity should be communicated through the interface and make the VC identity salient among members. Particularly, the constituents of VC identities may including logos, symbols, the statement of purposes, membership policies, community initiatives and promotion, presentation of management teams, interaction states of the VC, demographic features (e.g., size, active members, postings and etc.), unique interface design, and unique functionality design. All these features make VC boundaries visible and help members answer the question, “What does this VC stand for?” To the extent that more constituents of VC identities are conferred on the VC, the VC is likely to become a more salient target for identification, and this is especially relevant in VCs that are purely online where perceived legitimacy is often lowest.

If the above approach describe the effort from VC designers or top-down approach, identification in VCs may be also developed bottom-up, resulting from the interaction and exchange among members. In other words, VC identity could be negotiated among members rather than defined by VC designers. The resulting VC identity is considered as relevant and attractive to members. This is particularly necessary for those general VCs without a specific theme. Then it is necessary to trigger some VC activities to engage members in such identity negotiation/discussion.

As for supporting self-verification, Ma and Argwal (2007) identified four categories of existing VC features, i.e., virtual co-presence, persistent labeling, self-presentation, and deep profiling, which can facilitate members to verify their self-concepts in VCs. Virtual co-presence refers to artifacts that provide a sense of being together with other people in a shared virtual environment (e.g., the ‘who is online’ feature). Persistent labeling refers to the artifacts that guarantee a consistent identification (e.g., user ID) for VC members. Self-presentation includes features used to convey personal identities. Features in this category include visual presentations, unique IDs, personal profiles, avatars, signature files and weblogs. Deep profiling designates features that help to infer profiles of specific members from historical records. Member profiles can be built through both referential and inferential techniques. Some online communities provide search functions for retrieving the historical activity records of a particular member or of a particular discussion subject. More sophisticated designs incorporate content hit counters, ratings of contributions and participants (usually done by administrators) and peer evaluations, as well as displaying the value of contribution, and oversight or review of the contribution.

<table>
<thead>
<tr>
<th>VC Design</th>
<th>Supporting Identification</th>
<th>Supporting Self-Verification</th>
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<tbody>
<tr>
<td>• Logos &amp; symbols;</td>
<td>• Virtual co-presence: the ‘who is online’ feature.</td>
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<tr>
<td>• Statement of purposes; Membership policies;</td>
<td>• Persistent labeling: consistent user ID</td>
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<tr>
<td>• Community initiatives and promotion,</td>
<td>• Self-presentation: visual presentations, unique IDs, personal profiles, avatars, signature files and weblogs.</td>
<td></td>
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<tr>
<td>• Presentation of management teams;</td>
<td>• Deep profiling: search functions for retrieving the historical activity records and feedback systems.</td>
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<tr>
<td>• Interaction states of the VC, Demographic features (e.g., size, active members, postings and etc.);</td>
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<td>• Unique interface</td>
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As table 2 indicated, the conceptualization of VC artifacts can be extended using “personal vs. VC identities” as a framework. The perspective of identity communication provides additional insight. For instance, if the intended objective is to encourage identification with a VC and reduce the in-group/out-group separation within the community, then in creating user profile or registering for a VC, what should be the compulsory fields? What should be the default setting for the user information visible to the others? Is it always necessary to indicate the location, sex, or tenure/hierarchy? Demographic profile may produce a profound impact on social interaction. Especially when the information about the social categories is visible to the other members, the person may automatically apply certain social norms, which may lead to a more salient identification with the respective social categories than with the VC.

Although a few studies have attempted to conceptualize IT artifacts from identity perspectives (e.g., (Ma & Agarwal, 2007; Shen & Khalifa, 2010) more empirical research is necessary to accumulate evidence and to refine our understanding. The features in Table 2 are based on existing VC design. Nevertheless, such a framework will help not only understand the effects of existing design features on VC participation as mediated through various identity processes but also guide the future development.

**Interaction between Identification and Self-verification**

As VCs become an integrated platform with various IT features, multiple psychological/social psychological mechanisms need to be examined simultaneously to gain the complete insight on the complexity induced by technological settings. Identification and self-verification are two identity processes working in parallel, representing two distinctive needs of human beings. In the past, researchers have examined their roles in VC participation separately and suggest distinctive design implications, as discussed in section 2. Thus, rather than focusing on a single mechanism, future research should account for dual-identity processes in explaining member/group behavior and the effects of system design. It is important to reveal whether these identity processes are competing and exclusive to each other or actually complementary to each other. Answers to this question will have implications for VC management as well as VC design. For instance, if these two processes are exclusive in driving VC participation, e.g., highlighting self-identity or individuality expression dampens development of identification or vice versa, efforts need to be invested in facilitating the desired identity process and controlling the other one. Otherwise, if these two identity processes operate simultaneously without contradicting each other, then the understanding of their relative importance in driving VC participation will also be helpful in guiding the resource allocation within a VC. Furthermore, these two identity processes may not be completely independent. Social identities acquired by VC members may influence their strategies and behavior in communicating and verifying their self-identities. Meanwhile, members’ individuality expression may also play an important role in negotiating and shaping the collective identity. How these two identity processes influence each other in a VC is a challenging question to answer. Future research should take a dynamic and longitudinal approach and aim to develop process models to explicate the transformation between these two identity processes. To summarize, the following research questions can be formulated to guide future endeavors in uncovering the dual-identity processes in VCs:

- Are identification and self-verification exclusive or complementary to one another in affecting VC participation?
Particularly, identification has been studied in many contexts, e.g., groups, organizations, communities, and more particularly VCs. However, most prior research on organizational identification has focused on theoretical development, which has received limited empirical testing (Foreman & Whetten, 2002, pp. 618). In the context of communities, studies on identification have just started and many controversies still remain in several fundamental areas, such as the existence of community identities. In the IS field where VCs have received much interest, most prior studies take identification or theories developed in organizational contexts as given without exploring the specificity brought by IT artifacts. Future research should advance the theoretical work on identification to develop the conceptualization of VC identities and develop a research model to explain identification formation in VCs. To summarize, the following research questions can be formulated:

- What are the effective constituents of VC identity? How do members negotiate a VC identity? How does the management team shape the VC identity?
- How is a VC identity communicated within and across the VC?
- How do members develop identification with a VC?

**Contextualizing Identity Processes**

Finally, the demand for investigating the dual-identity processes in VCs also gives rise to better appreciating the dynamics and diversity in VCs. In most prior studies, researchers usually adopt existing typologies, e.g., communities of interest, fantasy, transaction, relation, and focus on one category of VCs, assuming homogeneity within the category. However, such an assumption may not hold. Our knowledge of VC characteristics and their interaction with individual behavior and group dynamics is limited. Thus, future research may aim to develop a more sophisticated and comprehensive typology for VC categorization. And a contingency approach to incorporate community characteristics into VC research might be useful to contextualize identity processes and their interaction with IT artifacts and consequences.

Prior research on identification reveals that group characteristics should be considered as important contingences influencing different routes to develop identification. For instance, Postmes et al. (2005) argue that the context where intergroup dynamics is not obvious or given from the start will be more likely to induce members to actively construct a norm or shared viewpoint. In another study, Postmes et al. (2005) demonstrate that the nature of group formation, i.e., common-bond vs. common-identity, also influences the formation of identification. However, research in this field is still in its infancy. Existing studies only provide limited and sparse evidence. In this researcher's experience, there is no evidence for group effects in the real setting. More exploratory work is needed in this regard to understand the role of community characteristics. To summarize, the following research questions can be formulated:

- What are the community factors that influence the relative importance of these two identity processes in driving VC participation?
- What are the community factors that shape the interaction between these two identity processes?

**CONCLUSION**
In conclusion, identity processes in the context of VCs are interesting phenomena to explore, which will also offer rich and insightful understanding about members’ behavior in VCs and provide important implications for VC management intervention and system design. This chapter compares and reconciles the two theoretical perspectives of identification and self-verification in understanding VC participation. Based on a critical review of prior literature, the author identifies theoretical gaps, and discusses areas for future research as well as its implications for VC design.

**Keywords:** Virtual Communities; Social Identity Theories; Self-Verification; Identity Confirmation; System Design

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