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Article

The Impact of Facebook Use on Micro-Level Social Capital: A Synthesis

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Abstract: The relationship between Facebook use and micro-level social capital has received substantial scholarly attention over the past decade. This attention has resulted in a large body of empirical work that gives insight into the nature of Facebook as a social networking site and how it influences the social benefits that people gather from having social relationships. Although the extant research provides a solid basis for future research into this area, a number of issues remain underexplored. The aim of the current article is twofold. First, it seeks to synthesize what is already known about the relationship between Facebook use and micro-level social capital. Second, it seeks to advance future research by identifying and analyzing relevant theoretical, analytical and methodological issues. To address the first research aim, we first present an overview and analysis of current research findings on Facebook use and social capital, in which we focus on what we know about (1) the relationship between Facebook use in general and the different subtypes of social capital; (2) the relationships between different types of Facebook interactions and social capital; and (3) the impact of self-esteem on the relationship between Facebook use and social capital. Based on this analysis, we subsequently identify three theoretical issues, two analytical issues and four methodological issues in the extant body of research, and discuss the implications of these issues for Facebook and social capital researchers.

Keywords: social network sites; Facebook; social capital; bonding; bridging; self-esteem

1. Introduction

In recent years, the popularity of social network sites (SNSs) has increased significantly [1]. As of December 2012, 67 percent of online adults in the U.S. state that they use one or more SNSs [2]. Among college students, this number is found to be even higher [3]. Facebook is currently the world's most used SNS, with an average of 1.39 billion daily active users in February 2015 [4].

SNSs enable users to create a profile and to make a list of other users with whom they have a connection [2,5]. Users can then interact with their connections, for example by sharing media or sending messages. Given that SNSs enable people to build and maintain social relationships online, their widespread diffusion into society has raised questions about how their use affects people's social relationships. Over the past decade, these questions have been addressed by a substantial number of empirical studies in which the relationship between indicators of SNS use and of micro-level social capital have been explored.

Although the extant body of research has revealed important insights into how users' engagement with the affordances of SNSs may lead to social benefits, scholars in the field have also voiced their concerns over various issues in the current scholarly work that currently impede maturation of the research field (e.g., [6]). As we find ourselves on the threshold of the second decade of research on the impact of Facebook use on social capital, it is important that we identify and examine these issues closely. To that end, the current article will provide (a) a synthesis of the extant empirical research on the relation between Facebook use and micro-level social capital, thereby examining different types of interactions on Facebook and different forms of social capital; and (b) an analysis of the theoretical, analytical, and methodological issues that can be identified in this research.

2. Background

2.1. Getting Social on the Internet

The question about the social implications of SNSs can be situated against the broader backdrop of research on the social implications of the Internet. In the early days of the Internet, research was mostly driven by concerns about the Internet's damaging impact on social relationships and people's psychological well-being (e.g., [7]). Two notable studies that fed these concerns were the studies from Kraut and his colleagues on the effects of Internet use on social relationships [8,9]. In a first study, Kraut *et al.* [8] described the Internet's role as paradoxical: although the technology was supposed to bring benefits to people's social lives by enabling online social interaction, the researchers found that heavier Internet users were in fact more likely to suffer from loneliness and depression. In a follow-up study [9], these findings were somewhat nuanced as the researchers found the former assumption was only true for those who already have poor social relationships (the poor-get-poorer hypothesis), whereas people leading rich social lives were found to benefit from online interactions (the rich-get-richer hypothesis).

Although the findings from Internet Paradox-studies appealed to some people's intuitive concerns, later empirical work found little support for them (e.g., [10,11]), and a number of authors pointed towards flaws in the research methodology of the Internet Paradox studies (e.g., [12]), as well as to general changes that may have occurred over time with respect to people's Internet use and how it impacts on

their social relationships (e.g., [9]). Scholars increasingly found evidence for positive effects of computer-mediated communication on the quality of people's social relationships (e.g., [11]), and the field of research on the social implications of new media technologies began to focus more on the particular affordances and uses of new media technologies and how these relate to differential outcomes in people's personal lives (e.g., [13]). It is against this backdrop that the scholarly work on SNSs and social capital can be understood.

2.2. Social Capital

Because SNSs revolve around the building and maintaining of the multiple social networks people are part of, a pertinent question to ask is whether SNS use contributes to social capital. Social capital, then, refers to the resources and benefits available to people, communities and/or broader society through people's social interactions [7,14,15]. One of the most used definitions of social capital, for example, is that of Bourdieu and Wacquant [15], who stated that social capital is "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" [15] (p. 119). In previous research, social capital has been associated with diverse positive outcomes, such as good health, less mental disorders, better educational achievements, and healthy, effective democracies (e.g., [16–19]).

Social capital is considered an umbrella term, as it is used to describe a wide range of social phenomena. The term can be used, for example, to refer to the benefits that individual persons reap from being in networks (*i.e.*, micro-level social capital), but it may also be used to refer to benefits of social interactions for the social midfield (*i.e.*, meso-level social capital) and the broader society (*i.e.*, macro-level social capital) [20]. Whereas the micro-level conceptualization focuses on the instrumental and socio-emotional benefits of social interactions for individuals, the meso- and macro-level conceptualizations focus on aspects such as community involvement, political participation and general trust [20]. In the current review article, we will only focus on the micro-level conceptualization of social capital. It is important to emphasize, however, that associations have also been found between Facebook use and these meso- and macro-level indicators (e.g., [21–24]).

2.3. Facebook and Social Capital: Bridging, Bonding, and Maintained Social Capital

Because the connections between people and the resulting benefits may vary in form and function [25], we will begin our literature review in the next section with a synthesis of what is known about the relationship between general Facebook use and different (sub-)types of micro-level social capital. Most studies examining the association between Facebook and micro-level social capital rely on Putnam's [26] distinction of bonding and bridging social capital. Bonding social capital is linked to strong ties. These are connections that are tightly knit and emotionally close, like close friends or family. These strong ties provide emotional support. Bridging social capital is linked to weak ties, which are loose connections between individuals who do not typically provide each other with emotional support. However, they do provide useful information or new perspectives [27]. Research in the area of SNSs proposed a third type of social capital, named maintained social capital, which are connections from previous communities who now live at a greater distance and with whom one has lost (face-to-face) contact [28]. SNSs create

an opportunity to find these individuals and to maintain contact with them; hence the name maintained social capital.

In order to examine the extant findings with respect to the relationship between general Facebook use and social capital, it is relevant to take into consideration the subdivision between bridging, bonding, and maintained social capital, since several studies have shown that the effect of Facebook use on these subtypes of social capital may vary. Since the release of Facebook, the effects of its use on these forms of social capital have been investigated (e.g., [22,28]). Although studies reveal a nuanced picture, in general these studies suggest that the use of SNSs may increase a person's social capital (e.g., [28]) because SNSs are typically used for social reasons, such as keeping in touch with existing friends and developing new friendships [28,29].

2.4. Types of Interactions on Facebook and Social Capital

The second topic that will be addressed in our literature review is the relationship between different types of Facebook interactions and indicators of social capital. After all, the use of Facebook is not a single entity, as there exist multiple possible activities that one can perform [30]. Communication on Facebook is generally executed through a range of interface-driven interactions. The main interaction elements that Facebook features are chat interaction, a direct message feature, wall posts, and status updates [31]. Each of these interactions may differ on a number of axes, including the expected amount of content, the anticipated response times of message recipients, and the public-private visibility of content [31]. These different types of interactions may have different effects on social capital.

Assuming different interaction preferences exist among users, it is important to assess how these different interaction types relate to social capital. *Directed communication*, such as private one-to-one disclosures between individuals (direct messages or chat interactions) or public interactions on the site directed to a specific person (likes or comments), may serve to deepen the interpersonal bonds between two individuals [32,33]. Facebook, however, also provides the ability to create persistent *public communication* with a bound audience. Status updates and wall posts of Facebook for example facilitate the construction of personal identity within the peer group [32,34]. These disclosures may serve as identity cues, signaling individual attitudes towards individual ties and the group [33]. Creating wall posts can thus both articulate a tie and identify features of the ties of the bounded group. This may in turn contribute to social capital. Third, individuals can use Facebook to *passively* consume social news [30]. Reading profile information and status updates of other people without actively interacting with them can still provide content for conversation grounding and can reveal users' similarities [35]. Therefore, consuming undirected messages, which allows users to keep in touch, may relate to social capital as well [30].

If we wish to analyze the extant findings with respect to the relationship between Facebook use and social capital, it is relevant to take into consideration which specific types of interaction have a relationship with social capital and whether distinct types of communication behaviors on Facebook lead to different social capital outcomes.

2.5. Self-Esteem, Facebook Use, and Social Capital

The third aspect that we will address in our literature review is whether intrapersonal characteristics, persons' self-esteem in particular, influence the relationship between Facebook use and social capital. Self-esteem is commonly related to indicators of social capital (e.g., [28,36,37]), as individuals with low self-esteem oftentimes have higher barriers to start social interactions [38,39]. This is also shown in the fact that they typically have few ties to, for example, friends and/or neighbors [36].

There are two opposing theoretical models that describe the impact of self-esteem on the relationship between Internet use and social capital on the Internet [9] that can also be applied to the use of Facebook in relation to social capital. The first model is the rich-get-richer model [9], which predicts that individuals who are highly sociable and have existing social support will benefit more from using the Internet. These highly sociable people, who are found to have higher self-esteem than less sociable people [9], are believed to be more likely to use Facebook to communicate with other people, and to use it to reinforce ties with those already in their support networks. In this way, they can gain benefits from both adding friends to their network and from strengthening bounds with their existing ties. Therefore, particularly these people with higher self-esteem can increase their social capital when using Facebook.

Second, there is the poor-get-richer or social compensation model, which predicts that people with a lack of social support and low self-esteem profit the most from using Facebook [40]. Facebook can, for example, provide greater benefits for users who are experiencing low self-esteem and low subjective well-being because on social network sites it is easier for these people to express themselves. Moreover, Facebook use may help to overcome social barriers faced by people with low self-esteem. People with fewer social resources could use Facebook to form connections with people and obtain supportive communications and useful information that they miss in their offline life [41]. The use of Facebook may thus lead to a higher increase in social capital for people with low self-esteem, since they might want to compensate for their lack of social capital in their offline life. The increase in social capital through the use of Facebook provides benefits such as increased information and opportunities [28]. This way, people with low self-esteem will be able to get more out of their social experience.

When we wish to identify to what extent the rich-get-richer model and the compensation model are present in research on Facebook and social capital, it is relevant to take into consideration what is known about how self-esteem (and other potentially relevant moderators) affect the relationship between Facebook use and social capital.

3. Literature Search and Procedures

We conducted a literature review on the above three topics as a starting point for identifying relevant theoretical, analytical and methodological issues. The focus of the review was on empirical articles that explicitly studied the relation between Facebook use and social capital. In order to find relevant literature, different digital search options were used. First of all, articles were searched for in the search engines of Science Direct, Google Scholar, and Wiley Online Library. The search terms that were used are: social capital, social network sites, Facebook, self-esteem, bridging capital, bonding capital, and maintained capital. In addition to these search engines, the Social Capital Gateway (SCG) was used to obtain papers about social capital and its effects. The SCG is a website which publishes all materials for

the study of social capital and related topics in a multidisciplinary perspective. For this particular study, the articles in the subcategory the Internet and social capital have been examined. Within this category the articles related to SNSs have been selected.

To be included as relevant in our final review, a source must have (1) specifically investigated Facebook; (2) been published in a peer-reviewed academic journal or peer-reviewed conference proceeding; and (3) reported empirical findings. The selection led to a total of 17 relevant articles which meet the earlier mentioned requirements and which will be used for the further analysis (see Table 1 for an overview).

4. Results

4.1. General Facebook Use and Social Capital

The first topic that we sought to address in our literature review was whether the extant literature identifies associations between Facebook use in general and different indicators of social capital.

Most studies on Facebook use and social capital have focused on the associations with bridging, bonding and maintained social capital. A general finding of these studies, is that there is a positive relationship between the intensity of Facebook use and *bridging* social capital (e.g., [28,42–44]). Ellison and colleagues [28], for example, found that when Facebook is used more intensely, students' efforts to develop and maintain bridging social capital are higher. Because a causal direction could not be assessed with their cross-sectional results, the authors performed a longitudinal analysis, by examining the same students one year later [25]. The results of this study revealed that the intensity of Facebook use in the first year strongly predicted bridging social capital in the second year. This effect was stronger than the alternate, cross-lagged correlation between bridging social capital in the first year and Facebook use in the second year. In later cross-sectional studies, similar positive findings for Facebook intensity and bridging social capital were found [42–44].

Differences in bridging social capital have also been found between SNS users and non-users. In a longitudinal study, Brandtzaeg [45] compared SNS users with non-users. The results showed that Facebook users have greater bridging capital than non-users. Lampe, Vitak and Ellison [46] made a distinction between non-users, light and heavy Facebook users. They found that light and non-use of the site was associated with lower levels of bridging social capital. In conclusion, all studies suggest that Facebook use has a positive relationship with bridging social capital.

Positive relationships have also been established between Facebook use and bonding social capital [28,43,44]. In the study of Ellison, Steinfield and Lampe [28], for example, a positive, albeit small, relationship was found between Facebook intensity and bonding social capital. Other studies found no (straightforward) relationship between Facebook intensity and bonding social capital within [47] or outside the university environment [30]. However, Lampe, Vitak and Ellison [46], for example, found that Facebook non-users and heavy users reported higher bonding social capital than light Facebook users, which suggests that a baseline level of Facebook use may be necessary for accessing the kinds of social resources associated with bonding social capital. In addition, a number of later studies showed that not Facebook intensity, but particular activities performed on Facebook (see Section 4.2) were a predictor of bonding social capital [28,48].

Three studies examined the relationship between Facebook use and college students' maintained social capital. Two studies found that Facebook intensity predicts maintained social capital, measured as the extent to which participants could rely on their high school acquaintances to do them small favors [28,43]. However, in a third study [49] both the number of times that individuals check Facebook daily and the estimated time spent on Facebook per week were not related to maintained social capital.

Overall, the above studies appear to indicate that being on Facebook and using it more intensely contributes mostly to bridging social capital, whereas general Facebook use seems less relevant for enhancing one's bonding or maintained social capital. This finding may not seem surprising, in light of the nature of Facebook as a social networking environment that is built around the idea of connecting with a large group of contacts from diverse personal networks [6].

4.2. Types of Interactions on Facebook and Social Capital

A second topic that we address in this literature review is how different interaction types on Facebook have a relationship with social capital. Based on the empirical research that dives into different types of activities on Facebook and their effect on social capital, we can distinguish two main categorizations of Facebook activities: (1) directed communication, broadcasting, and consumption; and (2) public *versus* private behavior.

Recent studies have identified three different types of Facebook activities [30,42]. The first type, directed communication, encompasses all one-to-one interactions between the user and another, directly identifiable Facebook member. Examples of directed communication are commenting, tagging, wall posting or sending private messages. The second type of activity, consumption, refers to the monitoring of content that is not specifically targeted at a given user, such as scrolling through one's news feed on Facebook. The third type, broadcasting, refers to communicating to a wider audience, for example by posting status updates that are not directed to a specific person in one's network, or by sharing content from others on one's own news feed. When using the aforementioned typology in empirical social capital research, only Burke, Marlow, and Lento [42] found a relationship between directed communication between friends and bonding social capital. Both Burke *et al.* [30] and Ellison *et al.* [48] found (modest) relationships between directed communication and bridging social capital. Passive consumption, on the other hand, appeared to be negatively related to both bridging and bonding social capital [42]. However, a longitudinal analysis by Burke *et al.* [30] did not find a causal effect of consumption and broadcasting on both forms of social capital.

Later research [44] focused on specific instances of directed, broadcasting or consumption behavior, such as liking or commenting on a post of a friend, or wall posting. In line with the findings of Burke, Marlow and Lento [42], for example, Lee and colleagues [44] found that the like function, which is categorized as directed communication on Facebook [30], has a positive relationship with bonding social capital. On the other hand, some findings of this study contradicted the findings of Burke, Marlow and Lento [42]. The comment function, for example, which is also categorized as directed communication on Facebook [30], had a negative relationship with bonding social capital. In addition, the frequency of wall use, which is classified as a venue for broadcasting, was a positive predictor of bridging social capital [44].

Stutzman and colleagues [50] focused on the relationship between social capital and “signals of relational investment”. These signals reflect the users’ intention to respond to Facebook Friends’ resource requests, which fall under directed communication. The results revealed that these signals of relational investment were a positive predictor of both bridging and bonding social capital, but the effects were stronger for bridging social capital. In line with Lee *et al.* [44], Stutzman *et al.* [50] also found a positive effect of broadcasting behavior (*i.e.*, disclosure on Facebook) on both bridging and bonding social capital.

Furthermore, Ellison and colleagues [51] created a measure of Facebook Relationship Maintenance Behavior (FRMB). This measure—comparable with signals of relational investment—assesses users’ intention to respond to requests or needs articulated by members of their network and to engage in relationship maintenance activities such as wishing a Facebook Friend “Happy Birthday”. They found that users who engage more in FRMB, reported greater Facebook-specific bridging social capital and general bridging social capital [51]. Brooks and colleagues [52] found that FRMB, which in this study captures individuals’ likelihood to engage in directed communication behaviors, predicts bonding and bridging social capital.

Some studies extract just one specific behavior on Facebook and see whether this behavior positively affects social capital. For example, when Facebook users post mobilization requests, which can be seen as a form of directed communication, this leads to more responses (*i.e.*, help) than non-mobilization posts (*i.e.*, broadcasting; [53]). In other words, mobilization requests lead to social capital. Earlier research [54] showed that 5% of the posts on Facebook are mobilization requests. Another specific behavior on Facebook is disclosing personal information. Vitak [55] found that the amount of self-disclosure—as in publicly broadcast messages—on Facebook predicted bridging social capital.

A second main classification of Facebook activities is the distinction made between “public” and “private” activities. Public activities encompass all communication activities that are visible to one’s friend network. Private activities encompass the directed communication only visible for the one it is directed to, such as a private message. Yoder and Stutzman [31]; for example, compared first-person communication with third-person communication. Third-person communication is third-party visible information, such as status updates on one’s own wall and wall-posts on the wall of Facebook friends. First-person communication options on the other hand, such as chatting and direct messaging, are only visible by the sender and the receiver. The results revealed that only the increased intensity of wall posting, a third-person behavior, had an effect on bridging social capital.

Although other studies did not explicitly compare private and public activities in the same way as Yoder and Stutzman [31], results related to public activities confirm the outcomes of Yoder and Stutzman [31]. Lee and colleagues [44] and Vitak [55], for example, found that when someone posts a message on a wall of a Facebook friend, this has a positive effect on bridging social capital. Vitak [55] did not take bonding social capital into account, while Lee *et al.* [44] did, but did not find an effect of public activities on bonding social capital. However, Stutzman *et al.* [50] found that disclosure behavior on Facebook, which is a public activity, enhances bridging and bonding social capital. Burke *et al.* [30] found no effect of publicly broadcasting updates on both forms of social capital.

Although the findings of studies on the relationship between specific Facebook activities and social capital are not entirely straightforward, some conclusions can be drawn. First, studies that investigated

the relation between directed communication and bridging social capital found evidence for a positive relation [30,45,50–53]. Directed communication also seems to predict bonding social capital [44,50,52], however one study [44] found a negative relation between using comments and bonding social capital. For broadcasting we also see a positive relation between posting status updates and both bridging [44,50,55] and bonding social capital [50]. For consumption, however, the results are less positive. In one study, there was no causal effect of consumption on social capital, in the other, there was a negative relation between consumption and both forms of social capital. Hence, we can conclude that active and directed behavior results in more social capital, while passive behavior does not. If we compare public *versus* private activities, we can conclude that, in order to enhance social capital, it is better to be publicly active on Facebook rather than privately active. Especially bridging [31,44,50,55], but also bonding social capital [50], was positively associated with public activities, such as giving status updates and revealing personal information. In two studies, however, no relation was found between public activities and bridging [30] and bonding [30,44].

4.3. Self-Esteem, Facebook Use, and Social Capital

Self-esteem is an intra-personal characteristic that is commonly used in studies on the relationship between social capital and Facebook use (e.g., [28,48]). In this literature review, we first focus on the role of self-esteem as a *moderator* of the relationship between Facebook use and social capital. Most studies show support for the poor-get-richer model [25,28]. While students with both low and high self-esteem gained in bridging social capital when using Facebook, students who reported low self-esteem appeared to gain more in bridging social capital if they used Facebook more intensely than students who reported high self-esteem. This suggests that the affordances of Facebook might provide greater benefits for students with low self-esteem [28]. Indeed, these results remained evident, and thus causality supported, in longitudinal studies [25,30]: while students with higher self-esteem in the first year also reported higher bridging social capital in the second year, the association between Facebook use and social capital was stronger for students with lower levels of self-esteem.

A number of other studies have included self-esteem as a *control* variable. These studies show direct relations between self-esteem and social capital. Ample studies, most of them cross-sectional (with an exception of [30,48]) found that people with high self-esteem reported higher levels of bridging [30,42,48,50,51] and bonding social capital [42,47,48,50,52]. For example, Vitak and colleagues [47] found that people with higher self-esteem reported higher levels of reliable alliance from their social networks, greater access to network members that provide advice or information for important life decisions, and greater levels of emotional intimacy with their social networks. A recent study [51] showed that those with higher self-esteem reported higher perceived Facebook-specific bridging social capital and general bridging social capital.

Studies on Facebook use and social capital thus suggest that a poor-get-richer or social compensation model best fits the relation of Facebook use and social capital, although self-esteem itself remains an important direct predictor of micro-level social capital.

Table 1. Studies on Facebook and micro-level social capital.

Authors	Ref.	Sample	Country	Method	IV/Moderator/CV	DV	Main Results
Ellison, Steinfield, and Lampe (2007)	[28]	<i>N</i> = 286 students <i>M</i> _{age} = 20.1	USA	Survey	FB Intensity Self-esteem Life satisfaction	BRISC BOSC MASC	FB Intensity has a positive relation with BRISC/BOSC/MASC. This relationship is stronger for people with low SE and less life-satisfaction.
Steinfeld, Ellison, and Lampe (2008)	[25]	<i>N</i> = 92 students <i>M</i> _{age} = 21.0	USA	Longitudinal survey (2 waves)	FB Intensity Self-esteem Life satisfaction	BRISC	FB intensity positively affects BRISC. This effect is stronger for people with low SE and less life-satisfaction.
Burke, Marlow, and Lento (2010)	[42]	<i>N</i> = 1193 adults <i>M</i> _{age} = 33.7	World	Survey + server logs of FB activity	FB Intensity Directed comm. Consumption Self-esteem Life satisfaction	BRISC BOSC Loneliness	Directed comm. positively predicts BRISC; it does not predict BOSC. Consumption negatively predicts BRISC and BOSC. SE predicts BRISC and BOSC.
Burke, Kraut, and Malow (2011)	[30]	<i>N</i> = 415 adults <i>M</i> _{age} = 33.7	USA	Longitudinal survey (2 waves)	Time spent on FB Number of friends Directed comm. Consumption Broadcasting Self-esteem	BRISC BOSC	Time spent on FB positively affects BRISC. Directed comm. positively affects BRISC. No effects of consumption and broadcasting on BRISC and BOSC. People with low SE experience a stronger effect of directed comm. on BRISC.
Ellison, Steinfield, and Lampe (2011)	[48]	<i>N</i> = 450 students <i>M</i> _{age} = 20.4	USA	Survey	FB use Number of FB friends + actual friends Self-esteem Connection strategies: initiating, info-seeking, and maintaining	BRISC BOSC	Info-seeking only connection strategy that (positively) predicts BRISC and BOSC. Number of actual friends positively predicts BRISC. SE positively predicts BRISC and BOSC.

Table 1. Cont.

Authors	Ref.	Sample	Country	Method	IV/Moderator/CV	DV	Main Results
Papacharissi and Mendelson (2011)	[49]	<i>N</i> = 344 students <i>Age range</i> : 18–25	USA	Survey	FB use (time spent + number of friends) Motives for FB use Unwillingness to communicate	BRISC BOSC MASC Affinity with FB	No relation between FB use and BRISC, BOSC, and MASC. Motives “expressive info sharing” and “relaxing entertainment” correlated highly with BRISC, BOSC, and MASC.
Vitak, Ellison, and Steinfield (2011)	[47]	<i>N</i> = 325 students <i>M_{age}</i> = 20.7	USA	Survey	FB intensity FB disclosures FB reciprocity Self-esteem	BRISC BOSC Social provision	FB intensity is positively related to BRISC. No relation between FB intensity and BOSC. SE predicts localized BOSC.
Yoder and Stutzman (2011)	[31]	<i>N</i> = 557 students <i>M_{age}</i> = 19.9	USA	Survey	Public comm. on FB (status updates + wall posts) Private comm. on FB (chat + direct messaging)	BRISC	Public directed comm. predicts BRISC.
Brandtzaeg (2012)	[45]	<i>N</i> = 391 adults <i>Age range</i> : 15–75	Norway	Longitudinal survey (3 waves)	Users <i>versus</i> non-users User type Informal sociability	BRISC Loneliness	Positive effect of SNS usage on BRISC. SNS users report more BRISC than non-users.
Stutzman, Vitak, Ellison, Gray, and Lampe (2012)	[50]	<i>N</i> = 230 students <i>M_{age}</i> = 21.2	USA	Survey	FB use: time spent + number of friends + actual friends Signals of relational investment (directed comm.) FB disclosures (broadcasting) Self-esteem	BRISC BOSC	Broadcasting is positively related to BRISC and BOSC. Directed comm. is positively related to BRISC and BOSC. There is a positive relation between SE and BRISC/BOSC.

Table 1. Cont.

Authors	Ref.	Sample	Country	Method	IV/Moderator/CV	DV	Main Results
Vitak (2012)	[55]	$N = 364$ students + PhD's $M_{age} = 30.0$	USA	Survey	Amount of FB disclosures (broadcasting) Intended disclosure	BRISC	Amount of disclosures (broadcasting) is positively related to BRISC. Intended disclosure is positively related to BRISC.
Johnston, Tanner Lalla, and Kawalski (2013)	[43]	$N = 572$ students $M_{age} = 20.6$	South-Africa	Survey	FB Intensity Self-esteem Life satisfaction	BRISC BOSC MASC	FB intensity is positively related to BRISC, BOSC, and MASC. SE does not moderate these relations.
Lampe, Vitak, and Ellison (2013)	[46]	$N = 614$ adults $M_{age} = 45.0$	USA	Survey	Users <i>versus</i> non-users FB usefulness Time spent on FB Number of friends + actual friends Signals of relational investment (directed comm.) Self-esteem	BRISC BOSC	Heavy users report higher BRISC compared to non-users or light users. Heavy users and non-users report higher BOSC compared to light users. FB usefulness is positively related to BRISC and BOSC. SE is positively related to BRISC and BOSC.
Lee, Kim, and Ahn (2014)	[44]	$N = 256$ $M_{age} = 20.9$	South-Korea	Survey	FB intensity Number of FB feature use Frequency of FB feature use Preference of FB feature use	BRISC BOSC	FB intensity is positively related to BRISC and BOSC. Use of wall (broadcasting) is positively related to BRISC. Use of likes (directed comm.) is positively related to BOSC. Use of comments (directed comm.) is negatively related to BOSC.

Table 1. Cont.

Authors	Ref.	Sample	Country	Method	IV/Moderator/CV	DV	Main Results
Brooks, Hogan, Ellison, Lampe, and Vitak (2014)	[52]	<i>N</i> = 238 adults <i>M_{age}</i> = 45.0	USA	Survey + actual FB behavior	FB use: Time spent + number of friends + actual friends FRMB Info-seeking behavior Self esteem	BRISC BOSC	Number of friends and visits on FB are not related to BRISC and BOSC. Info-seeking behavior predicts BRISC and BOSC. FRMB (directed comm.) predicts BRISC and BOSC. There is a positive relation between SE and BOSC.
Ellison, Vitak, Gray, and Lampe (2014)	[51]	<i>N</i> = 614 adults <i>M_{age}</i> = 45.0	USA	Survey	FB use: Time spent + number of friends + actual friends FRMB Self-esteem	BRISC (general and FB specific)	FRMB is positively related to both forms of BRISC. Actual FB friends is positively related to both forms of BRISC. Number of friends is positively related to general BRISC. SE is positively related to both forms of BRISC.
Lampe, Gray, Fiore, and Ellison (2014)	[53]	<i>N</i> = 3877 status updates	World-English status updates	Content analysis	Mobilization requests Mobilization subtypes User characteristics (e.g., visitation frequency) Post characteristics	Responses on mobilization requests	Posts that attempt to mobilize help receive more response (social capital) than non-mobilization attempts.

Note. FB = Facebook; BRISC = Bridging Social Capital; BOSC = Bonding Social Capital; MASC = Maintained Social Capital; SE = Self-esteem; IV = Independent Variable; DV = Dependent Variable; CV = Control Variable; FRMB = Facebook Relationships Maintenance Behavior; Comm. = Communication.

4.4. Theoretical, Analytical and Methodological Issues

Although the extant body of research has provided us with a rich insight into how people's use of Facebook affects micro-level social capital, a number of issues can be identified in the current scholarly work that need to be addressed in order to let the field mature in the next decade of research. These issues are theoretical, analytical and methodological in nature. Theoretical issues relate to the way in which researchers have conceptualized relevant constructs and underlying mechanisms. Analytical issues relate to how aspects of the analysis itself may impact on study findings. Finally, methodological issues relate to the operationalization of constructs, as well as to the procedures used to gather data.

4.4.1. Theoretical Issues

Theoretical issues concern the way in which (assumptions about the associations between) concepts are grounded in theory. We see at least three relevant theoretical issues. With respect to the relationship between general Facebook use and micro-level social capital, a first issue that can be identified refers to the Facebook intensity concept, which entails not just mere Facebook usage (in terms of frequency and duration), but also the level of emotional connectedness towards the site and the extent to which it has been integrated into people's daily activities [28]. Although the Facebook intensity measure shows consistency in terms of its internal reliability across studies, and generally performs well in analyses (e.g., [25,28]) a rationale explaining the theoretical underpinnings of the construct itself, and *why* exactly intensity is assumed to predict social capital is largely lacking.

Partly in recognition of the limitations of the Facebook intensity construct, more recent work has begun to focus more on specific Facebook-activities. Such a focus has proved fruitful, as fairly consistent results emerge between particular activities and social capital outcomes. Caution is warranted, however, as the tendency to describe and use more and more specific Facebook activities may lead to somewhat tautological concepts and conclusions. Although decent categorizations of Facebook activity exist, the challenge to integrate the multifold of Facebook activities into one comprehensive framework will undoubtedly continue. Such endeavors are crucial, however, to enable researchers to draw conclusions that extend beyond one particular Facebook activity.

A second theoretical issue refers to the theoretical rationale underlying the "maintained social capital" construct. Ellison *et al.* [28] (p. 1146) explain the concept as referring to "the ability to maintain valuable connections as one progresses through life changes". Although there is an intuitive understanding of what maintained social capital entails, from a theoretical point of view we may question to what extent it is conceptually different from bonding and bridging social capital, in particular if we define micro-level social capital as the *resources* one has access to, by means of one's personal relationships (*cf.* [15]). It is likely that some of the "maintained connections" that people have, offer socio-emotional support (*i.e.*, bonding social capital), whereas others offer instrumental support (*i.e.*, bridging social capital), but whether there is a qualitative difference in the support provided by "maintained connections" *versus* other connections remains unanswered. In addition, it is unclear how we should conceptualize the boundary between maintained, strong and weak ties.

Finally, a third theoretical issue refers to the theoretical conceptualization and use of the social capital concept. In most studies on Facebook use and social capital, social capital is fairly narrowly defined as

“the benefits that individuals can reap from having social connections”, while devoting little attention to the meso- or macro-level dimensions of social capital. Although the focus on micro-level social capital can be justified from a theoretical point of view, it is unfortunate that few scholars have addressed nor discussed the potential relevance of their findings with respect to meso- and macro-level capital. After all, whereas individuals may generally reap benefits from Facebook use by receiving support from close friends and information from acquaintances, the outcomes of SNS use for the social midfield and civic society (*i.e.*, the “public” face of social capital, *cf.* [26] p. 20) are far less certain. Gergen [56], for example, is concerned that new communication technologies push towards the formation of more shallow, self-absorbed social networks in which people are much more concerned about other members’ everyday personal problems than in the macro-level socio-political landscape. Putnam [26] warns about the Internet’s potential for creating islands of homogenous others (*i.e.*, the cyber-Balkanized society). Ling [57] posits that new media technologies may contribute to a solidarity that is “bounded” by the confines of the community. Although studies find positive associations between civic and political uses of Facebook (e.g., posting about one’s political orientation) and macro-level social capital (e.g., [58]), to date, few studies on Facebook and social capital have addressed the question whether the individual benefits gained from Facebook use may have a dark trade-off.

4.4.2. Analytical Issues

Analytical issues concern how aspects of the analysis itself and the context in which the analysis was performed, affect study outcomes. A first analytical aspect that can be identified is the aspect of study timing. Facebook as a platform is continuously changing its features, settings and algorithms, and therefore users’ perceptions of the affordances of the platform are likely to also continuously change (e.g., [59]). This changing nature of Facebook implies that researchers need to take into account that differences with respect to the time at which studies were conducted may also account for differences in study outcomes. Facebook’s “liking”-feature, for example, could not have been included in the early studies on Facebook and social capital, because it was not technically possible in the early days of the platform. As a later study from Ellison and colleagues [51] shows, however, the use of this feature is predictive of bridging social capital, as it is an example of social grooming.

A pertinent question that arises is to what extent added or changing features affect (and potentially invalidate) former study findings. Recently, for example, scholars have indicated that-because of the increased commercial context of Facebook, users consider it a less suitable venue for intimate self-disclosure than before. This change in people’s perceptions of the platform, may affect their actions and therefore also the subsequent outcomes. In addition, as changes in Facebook appear so rapidly, research is per definition one step behind. Although researchers account for this by giving explicit descriptions of the Facebook features involved in their studies, the fact remains that Facebook research always risks being a little bit outdated.

A second analytical issue refers to the lack of attention for the devices and contexts in which people use Facebook. With the advent of the mobile Internet, Facebook is increasingly being accessed from mobile devices such as smartphones and tablet computers. The nature of these devices first of all affects the way in which Facebook is used. For instance, usability issues such as a smaller screen size or the lack of an external keyboard may prevent users from posting or commenting, while the “swiping” feature

may facilitate browsing behavior. Secondly, the use of these devices changes the contexts in which Facebook is used, as users increasingly access Facebook when they are mobile, such as during periods of “waiting time”. Smock, Ellison, Lampe, and Wohn [60] found that users’ motivations for using Facebook predict their use of different features, such as wall posts. To date, scholars have not yet addressed how the device on, and the context in which Facebook is accessed, affect user behavior and—through this user behavior—social capital.

4.4.3. Methodological Issues

Finally, methodological issues concern the reliability and validity of the methods and measures applied in the reviewed studies. As several authors have already mentioned, a first methodological issue is that—although some studies have employed longitudinal research designs—the majority of studies on Facebook and micro-level social capital still remain cross-sectional in nature. Although these studies are generally careful not to make explicit or implicit assumptions about the causal nature of relationships, the issue of causation remains important, as it is not unthinkable that people’s activities on Facebook are at least partly driven by the nature of the social relationships that they have.

A second issue pertains to the operationalization of the social capital measures. To date, most studies have relied on the Internet Social Capital Scales (ISCS) developed by Williams [11], or on the shortened and slightly revised version of this scale as developed and used by Ellison, Steinfield and Lampe [28]. The ISCS is used frequently in studies on micro-level social capital because it differentiates between bonding and bridging social capital. Although widely used, however, a recent study from Appel *et al.* [60] found that both Williams’ measure and its shortened version had low convergent validity with established, structural measures of social capital, while showing modest relationships with social support and institutional attachment measures. In addition, the scales did not discriminate between bonding and bridging as successfully as their structural counterparts. Appel *et al.* [61] therefore call for caution when interpreting results from studies on Facebook and micro-level social capital, and advise the use of either structural measures or social network analysis. As the authors mention, however, these latter measures come with their own limitations, such as a limited capacity for studying large-scale change over time. In addition, the reality is that a majority of media scholars still relies predominantly on (short) self-report measures, for which these latter measures form no immediate alternative.

The use of self-report measures may not only limit the reliable and valid measurement of social capital, but also the measurement of Facebook activity. Particularly in light of the observation that Facebook use increasingly occurs on smartphone devices, and therefore forms part of people’s habitual routines, this third methodological issue may be especially relevant: as habits are cognitively inexpensive and occur in an automated fashion, habitual behaviors may be difficult to recall [62]. Respondents may therefore need to rely on estimation strategies when asked about the frequency with which they engage in particular Facebook activities. As the automated logging of media behavior becomes increasingly accessible as a research tool, and has already successfully been used in some of the reviewed studies [42,53,54], this issue may be accounted for in the future.

Finally, a fourth methodological issue is related to the frequent use of (college) student populations in research on Facebook and micro-level social capital. Although student samples are a valid source of data about communication in general and the use of Facebook in specific, researchers need to be careful

when making inferences about the general population from findings gathered among (college) students. Particularly when researchers are unsure whether the constructs under examination are stable across life stages and/or age groups, generalizations from student samples may be problematic [63]. In the case of the relationship between Facebook and micro-level social capital, this problem may be salient, as both the importance, quality, composition, interaction with and size of people's social networks, and the use of Facebook is likely to differ between life stages and/or age groups.

5. Conclusions

The first aim of the current review article was to provide a synthesis of the extant body of research on Facebook use and micro-level social capital by presenting an overview and analysis of current research findings. Our overview shows fairly consistent patterns of relationships across studies. With respect to the relationship between "general Facebook use" and micro-level social capital, the most prominent relationship found across studies is that between Facebook intensity and use (*versus* non-use) and bridging social capital, whereas relations with bonding social capital tend to be weaker. Additional investigations of the particular activities that people perform on Facebook show that mostly directed communication and public activity bring benefits in the form of bridging (and to a weaker extent bonding) capital, whereas the social capital outcomes of more passive Facebook use appear to be absent or negative. Finally, self-esteem is a relevant moderator of the relationship between Facebook use and micro-level social capital, whereby most studies find evidence for a poor-get-richer or compensation relationship.

Although fairly consistent patterns emerge out of the studies' findings, there are a number of theoretical, analytical and methodological issues that can be identified in the extant body of research that nuance our interpretation of the patterns, and that point towards important aspects to consider for future research. Therefore, the second aim of this article was to identify and discuss a number of these issues that need consideration in order to advance this field of research. These issues are not isolated, but interact with one another: changes in the devices through which people predominantly access Facebook, for example, may affect theoretical conceptualizations (e.g., is habitual Facebook checking behavior an indicator of Facebook intensity or not?), the analysis (e.g., how can researchers account for multi-device use in their research designs and analyses?), and research methodology (e.g., can people reliably and validly self-report their Facebook use?). We hope that these issues may serve as a starting point for future researchers to critically examine extant research findings, and to draw up new research questions for the future.

Author Contributions

All authors made an equal contribution to this work.

Conflicts of Interest

The authors declare no conflict of interest.

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