

1 Article

2 **Well-Being and Social Media: A Systematic Review of** 3 **Bergen Addiction Scales.**

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12 **Abstract:** Does social media addiction impair the well-being of non-clinical individuals? Despite
13 Internet can be considered as a promoting factor for individual empowerment, previous literature
14 suggests that the current massive availability of Information and Communication Technologies
15 (ICT) may be dangerous for users' well-being. This article discusses the relationship between the
16 most used social media addiction measures (i.e., the Bergen Facebook Addiction Scale - BFAS, the
17 Bergen Social Media Addiction Scale - BSMAS) and well-being. A systematic review considering all
18 the publications indexed by PsycInfo, PsycArticles, PubMed, Science Direct, Sociological Abstracts,
19 Academic Search Complete, and Google Scholar databases was performed to collect the data. Ten
20 of 635 studies were included in the qualitative synthesis. Overall, most of the included works
21 captured a negative but small relationship between BFAS/BSMAS and well-being, across multiple
22 definitions and measurement.

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24 **Keywords:** Well-being, Bergen Facebook Addiction Scale, Bergen Social Media Addiction Scale,
25 Social Media Addiction.

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28 **Introduction**

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Information and Communication Technologies (ICTs), in the age of Internet of Things, increasingly affect and frequently determine people's everyday lives [1,2]. Through these technologies, we can access the Internet and social media at any moment we like and in many countries across the world [3] in order to have informational or identity support and capital. On social media such as Facebook, Twitter, Instagram, or Tik Tok, people are engaged in a whole series of activities, which encompass entertainment (e.g., playing games, passing time, fighting boredom), social activities (e.g., communicating, socializing, self-disclosing, keeping in touch with relevant virtual social communities, maintaining offline networks), and identity needs (e.g., building a virtual social identity) [4–8], and providing health information [9].

Given the attractiveness and availability of social media, people are becoming more and more connected to them both in terms of engagement (e.g., time spent) and presence (e.g., SNs accounts owned) [10–12]. In other words, social media are becoming a "normal" part of our contemporary lives [13].

Together with the increasing usage of such media, scholars observed that an excessive Internet, gaming, or social media use could be associated with addiction [14,15] and other psychiatric comorbidity (e.g. depression, alcohol abuse) [16].

Although the diagnostic framework is not entirely clear in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [17,18], other researchers define Internet and social media addiction as

47 compulsive use and withdrawal, craving, tolerance, interpersonal and health-related problems
48 [19,20]. The Internet and social media users may expect a lower quality of life and well-being [21]
49 due to have problems with self-care, difficulty in performing daily routine, suffer from pain and
50 discomfort, anxiety and depression [22].

51 Nonetheless, the contributions concerning the relationship between social media addiction
52 (especially Facebook) and well-being have not yet been systematized accounting for the multiple
53 conceptualizations and, thus measures, of well-being adopted across studies. The aim of this article
54 is to offer a systematic review of empirical evidences connecting the Bergen Facebook Addiction
55 Scale - BFAS [23] and the Bergen Social Media Addiction Scale - BSMAS [24], with well-being.
56 Moreover, the size and direction of the relationship between well-being and social media addiction
57 measured through Bergen's addiction scales will be identified and discussed. As it emerges from the
58 literature, we expect a negative relationship between the two constructs [3,25–27].

59 The paper is organized as follows. In the "method and procedures" section, BFAS and BSMAS
60 measures will be presented together with the rationale behind their development. The systematic
61 review methodology and inclusion/exclusion criteria will be described after. In the results section,
62 the included studies will be analyzed and presented in two separate paragraphs. The first one will
63 include the studies that relied on well-being definitions that fall within the dichotomy
64 hedonic-eudaimonic well-being. The second one will instead encompass all the works that are not
65 attributable to this classification. Finally, the results will be critically discussed in the last section.

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67 **Method and procedures**

68 In this section details about BFAS and BSMAS are provided, including psychometric properties
69 and the rationale behind their construction, since the two scales are the central topic of this
70 systematic review.

71 The authors searched all the studies that put in relationship BFAS/BSMAS with well-being as
72 described in the article methodology. The inclusion and exclusion criteria are spelled out in detail in
73 the dedicated section, which also tracks the information flow through the review process.

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75 **Measuring Facebook and Social Media Addiction**

76 The study of Internet addiction phenomena grew along with the availability of ICT
77 technologies. Since the late nineties, researchers investigated whether people become addicted and
78 developed Internet-related addiction measures [28,29]. As Facebook became more popular across
79 broad segments of Internet users [30], dedicated measures were needed. For instance, the Addictive
80 Tendencies Scale was developed [31]. Nonetheless, it failed to consider all addiction's core
81 components. To overcome this limitation the Bergen Facebook Addiction Scale [23] was constructed.
82 The scale is composed of six items, each of them reflecting one core aspect of addiction [32–35],
83 namely: (a) salience (i.e., the activity controls thinking and behavior), (b) mood modification (i.e., the
84 activity is carried on to improve mood), (c) tolerance (i.e., increasing amounts of the activity are
85 needed overtime), (d) withdrawal (i.e., unpleasant feelings emerge when the activity is reduced or
86 interrupted), (e) conflict (i.e., the activity interfere in relationships and other activities), and (f)
87 relapse (i.e., the tendency to return to earlier levels of the activity after abstinence).

88 The BFAS shows an adequate dimensionality ($\chi^2/df = 1.84$; Comparative Fit Index [CFI] = 0.99;
89 Root Mean Square Error of Approximation [RMSEA] = 0.05) [36] and reliability (Alpha coefficient is
90 0.83) [37]. For this reason, BFAS has been adopted and used as a psychometrically sound instrument
91 for measuring Facebook-related addiction. Indeed, at the time of writing, the "Web of Science"
92 tracking system reports 310 citations for BFAS, while Google Scholar 893.

93 Despite the undoubted utility of the instrument, the Bergen Facebook Addiction Scale risks
94 being too specific in the current environment in which social media proliferates and Facebook is no
95 more the only one on the pitch [38,39]. For this reason, BSMAS was developed to capture the totality
96 of all social network sites [24]. Although maintaining the same rationale (i.e., addiction criteria) and
97 items' main structure, BSMAS uses the words "social media" instead of the word "Facebook" with
98 social media being defined as "Facebook, Twitter, Instagram and the like". For the sake of clarity, we

99 specify that in the literature "Bergen Social Networking Addiction Scale" (BSNAS) has been reported
100 as an alternative name for this instrument's version. In any case, the internal consistency of the
101 BSMAS results high ($\alpha = 0.88$), while dimensionality information is currently missing but assumed
102 similar to BFAS. Although Bergen's addiction scales were related to addiction's negative outcomes
103 (e.g., poor sleep quality, anxiety, depression), well-being measures were not adopted as validity
104 measures in the original works for BFAS, BSMAS, and BSNAS, but were rather tested in subsequent
105 studies.

106 **Search Strategy**

107 We relied on an adapted version of the systematic qualitative review approach [40] to select the
108 sources to include and discuss in our article. As a first step, we asked academic information
109 specialists to search for BFAS, BSMAS and BSNAS scientific studies encompassing international
110 books, articles, reference works, conference papers and Ph.D. theses. The specialists completed their
111 task using the EBSCOhost platform and consulting the databases of PsycInfo, PsycArticles, PubMed,
112 Science Direct, Sociological Abstracts, and Academic Search Complete. The authors on their part
113 contributed to the search by consulting Google and Google Scholar to increase the chances of
114 identifying the widest range of sources possible. Moreover, we inserted in our preliminary database
115 all the scientific works that cited the articles in which BFAS, BSMAS, and BSNAS were presented for
116 the first time using Web of Science, Scopus, and Google Scholar tracking system. The sources coming
117 from academic information specialists and the authors have been merged in a single dataset and the
118 duplicate sources were removed. The final dataset was set-up with only peer-reviewed sources in
119 which Bergen's addiction scales were empirically tested along with well-being measures. At this
120 stage, full-texts were required for all the work included in the dataset. Furthermore, we specify that
121 we included in the final dataset only sources written in Italian or English.

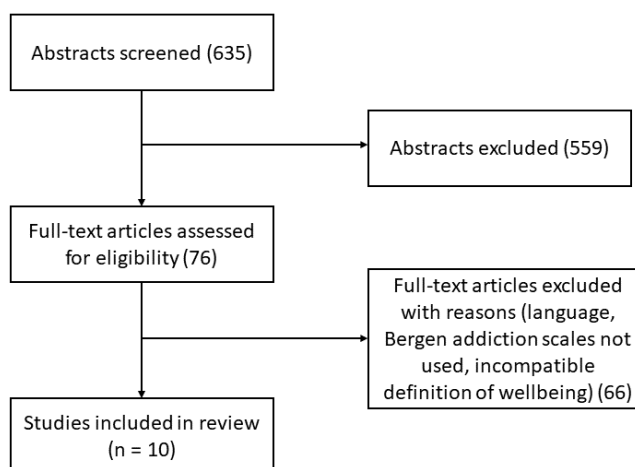
122 **Inclusion and Exclusion Criteria**

123 Of the 635 results obtained during the screening phase, only 76 mentioned the words "well
124 being", "wellbeing" or "well-being" in the title, abstract or keywords, and thus were eligible.

125 Among the 76 results, 49 were excluded because BFAS, BSMAS, or BSNAS were not used but
126 only mentioned. 8 other sources were also excluded because no suitable measure of well-being was
127 employed. Indeed, in these 8 studies, well-being was not defined accordingly to the World Health
128 Organization (WHO) definition [41]. WHO refers to health as a state of complete physical, mental
129 and social well-being and not merely the absence of disease or infirmity. So, for instance, those
130 studies that refer to well-being as a lack of psychological conditions (e.g., depression) were excluded.
131 Only the sources written in Italian or English were included, so further 5 results were excluded
132 because were written in other languages. Other 4 papers were excluded because data analysis was
133 not suitable for the systematic review process (e.g., lack of descriptive statistics, no correlation
134 coefficients provided for the variables of interest). Finally, it was possible to identify 10 studies
135 which describes the correlation between BFAS or BSMAS or BSNAS, and some measure of
136 well-being [15,42–50].

137 The flow diagram of the study has been shown in the Figure 1.

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143 **Figure 1.** diagram showing the flow of information through the review: the number of records
144 identified, included and excluded, and the reasons for the exclusions.

145 146 147 **Results: Facebook and Social Media Addiction Effects on Well-being**

148 Various conceptualizations and measures of well-being have been provided over the years
149 [51–54]. For the sake of clarity, we decided to present the included studies' results in two dedicated
150 sub-section, considering whether the studies relied on well-being measures that fall within the
151 cluster hedonic-eudaimonic or not.

152 153 **Hedonic and Eudaimonic Well-being**

154 Historically, the multi-dimensional construct of well-being [55] has been categorized by
155 psychologists [56] into two clusters: hedonic well-being (HWB) and eudaimonic well-being (EWB)
156 [57–59]. HWB is usually represented by two main aspects: a cognitive evaluation component (i.e.,
157 satisfaction with life) [60] and an affective evaluation component (i.e., the prevalence of positive
158 emotions over negative emotions) [61]. Instead, EWB is rather framed in terms of individuals'
159 optimal functioning and self-realization (e.g., meaning in life, flourishing) [58,62–65].

160 In our dataset, six studies [15,43,45,47–49] employed a well-being measure that falls into the
161 hedonic well-being framework. BFAS (or the version for Weibo) was used in all of them. Three
162 studies [15,47,48] investigated the relationship of Facebook addiction with satisfaction with life (i.e.,
163 cognitive evaluation component of HWB) reporting a Person's r coefficient ranging from -0.324 to
164 -0.11. For the sake of clarity, Pearson's r is interpretable as it follows [66]: we have a negligible
165 correlation for coefficient lower than |0.30|, a low correlation for values between |0.30| and |0.50|,
166 a moderate correlation for r values ranging from |0.50| to |0.70|, a high correlation for coefficients
167 between |0.70| and |0.90|, and a very high correlation for values ranging from |0.90| to |1.00|. Thus,
168 in our case, we have a small (from negligible to low) negative correlation between BFAS and
169 people's satisfaction with life. The effect size of BFAS on Life Satisfaction is roughly estimated as
170 ranging from 1.2% and 10% across the three studies. Interestingly, in Wang, Gaskin, Wang & Liu [15]
171 work, for people that not excessively use Weibo social media the correlation value is 0.05 and
172 resulted not statistically significant, which highlights the absence of any sort of linear relationship
173 between addiction and well-being.

174 Satici & Uysal study [48], together with Satisfaction with Life, also employed other two hedonic
175 well-being measures, namely: The Subjective Happiness Scale (SHS) [67] and the Subjective Vitality
176 Scale (SVS) [68]. Both scales presented correlation values around -0.30. More precisely, -0.287 for

177 happiness and -0.32 for vitality. A further measure related to the cognitive component of HWB has
178 been derived from WHOQOL Brief scale [69] and asks people to rate their perceived quality of life
179 [70]. In Atroszko and colleagues' work [43], the relation between BFAS and Quality of life resulted
180 negligible (i.e., Pearson's $r = 0.07$).

181 In our dataset, three studies [45,47,49] investigated the BFAS relationship with the affective
182 component of HWB. These works employed each a different instrument for assessing well-being,
183 which were the Positive and Negative Affect Schedule (PANAS) [61], the Activation-Deactivation
184 Adjective Checklist (ADACL) [71], and the WHO-5 Well-Being Index [72].

185 Three studies investigated how BFAS affects the affective component of HWB. Two out of three
186 works [45,47] found statistically significant but negligible correlations. In particular, BFAS
187 entertained a negative relationship with positive affect and a positive one with the negative affect
188 component both measured by the Positive and Negative Affect Schedule (PANAS). While the
189 Activation-Deactivation Adjective Checklist (ADACL), which explores at the same time positive and
190 negative feelings, correlated -0.10 with BFAS [45].

191 A different result emerged in the Turel and colleagues work [49], in which BFAS accounted for
192 approximately 32% of the variance in The World Health Organisation Five Well-Being Index
193 (WHO-5) score.

194 Finally, only one study put together EWB and BFAS [48] using the Flourishing Scale [62]. The
195 flourishing definition encompasses purpose in life, self-esteem, positive relationships, competence,
196 engagement, optimism, and contribution toward the well-being of others [63,64]. Even in this case,
197 BFAS achieved a small negative correlation (i.e., Pearson's $r = -0.287$).

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Other Well-being Measures

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201 The distinction rooted in philosophy between HWB and EWB does not necessarily translate
202 well to science [73]. For this reason, the relationship between Facebook/Social Media Addiction and
203 wellbeing was also explored relying on other well-being measures. These measures distinguish
204 themselves from the previous in several ways. Measures like the Positive Mental Health Scale
205 (PMH-Scale) [74], take at the same time both the hedonic and the eudaimonic approaches into
206 account, while the Wellbeing Process Questionnaire (Student WPQ) [75] and Ryff's Psychological
207 Well-being scale (PWB) [76] use psychosocial concepts to assess well-being in a more comprehensive
208 manner. Psychological well-being is defined in terms of human functioning and thus in some way
209 very closely to EWB, but also encompasses typical aspects of HWB (for instance the cognitive
210 evaluation of one's life) [77].

211 Overall, four studies used well-being measures that did not fall within the dichotomy HWB and
212 EWB [42,44,46,50]. The PMH scale showed a negative linear relationship with BFAS (Pearson's $r =$
213 -0.27) [44].

214 A similar result emerged from the Alheneidi work [42], which employed the Student WPQ
215 measure to assess well-being relationship with social media addiction. BSMAS presented a positive
216 linear correlation with the negative well-being score from the Student WPQ (i.e., Pearson's $r = 0.28$), a
217 smaller correlation with the positive well-being (i.e., Pearson's $r = -0.13$), while no relationship
218 emerged with the positive appraisal which represents people's life satisfaction (i.e., Pearson's $r =$
219 0.06). For the sake of clarity, we specify that scores of depression, negative affect, and anxiety define
220 the negative well-being in the Student WPQ, while the positive well-being is described by both
221 positive affect and positive appraisal.

222 The same author tested the same relationships with a sample of workers employing the
223 dedicated WPQ version [78], obtaining quite similar results. Negative well-being showed a higher
224 correlation with BSMAS (i.e., Pearson's $r = 0.45$). The relationship between BSMAS and positive
225 well-being resulted in a lower and not statistically significant Pearson's r value (i.e., $r = 0.03$). No
226 information was directly provided for the positive appraisal, nonetheless, since neither the positive
227 well-being (which is the composite measure of positive affect and appraisal) nor the positive affect
228 (i.e., Pearson's $r = 0.06$) presented statistically significant correlation values, we can assume that
also in this case BSMAS did not appear to affect people's life satisfaction.

229 A further study [50] has investigated the relationship between BSMAS and well-being
 230 employing the Ryff's Psychological Well-Being Scale, showing a small negative correlation
 231 (Pearson's $r = -0.34$). BFAS was also put in relation to psychological well-being but only accounting
 232 for the relational aspect (i.e., positive relations with others dimension) of the Ryff's scale [46]. In this
 233 case a very small (i.e., negligible) correlation (Pearson's $r = -0.13$) was reported with BFAS scores.

234 In Table 1 is presented the full picture of the relationships entertained by Bergen's addiction
 235 scales with well-being measures in the included studies.

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 237 **Table 1.** The 10 included studies in which the well-being measures have been used jointly with
 238 BFAS or BSMAS.
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ID	AUTHOR	YEAR	COUNTRY	SAMPLE SIZE	SAMPLE DESCRIPTION	MEASURE OF WB	CORRELATION COEFFICIENT
Bergen Facebook Addiction Scale (BFAS)							
1	Turel & Gil-Or	2018	Israel	215	Israeli college students (age range: 20-65; M-age = 26.99)	WHO five item Wellbeing Index (WHO-5; [72])	-0.57**
2	Satici & Uysal	2015	Turkey	311	Turkey university students (age range: 18-32; M-age = 20.86 years)	The Satisfaction with Life Scale (SWLS; [60])	-0.32**
						Flourishing Scale [62]	-0.29**
						Subjective Happiness Scale (SHS; [67])	-0.32**
						Subjective Vitality Scale (SVS; [68])	-0.32**
3	Atroszko, Balcerowska, Bereznowski, Biernatowski, Pallesen, & Andreassen	2018	Poland	1157	Gdańsk full-time university students (M-age = 20.33 years)	Adapted WHOQOL Brief scale - Quality of life [70]	-0.07*
4	Wang, Gaskin, Wang & Liu	2016	China	915	College students China (M-age = 19.87)	Satisfaction with Life Scale (SWLS; [60])	-0.11** (excessive user of Weibo) 0.05 (non-excessive users)
5	Satici	2019	Turkey	280	University students (range 17-25; M-age = 21.04 years)	Positive and Negative Affect Schedule (PANAS; [61])	Range from -0.13** to -0.18**
						Satisfaction with Life Scale (SWLS; [60])	Range from -0.16** to -0.21**

						[60])	
6	Brailovskaia, Teismann, & Margraf	2018	Germany	122	German college students that were Facebook users (age range: 17-38)	Positive Mental Health Scale (PMH-Scale; [74])	-0.27**
7	Du, van Koningsbruggen & Kerkhof	2018	US, UK, Canada, and Australia	405	Prolific platform users. Age range: 18-59 years; M-age=31;	Activation Deactivation Adjective Checklist (ADACL; [71])	-0.10*
8	Olufadi	2016	Nigeria	1808	People from Ilorin metropolis. Age range: 20-58; M-age = 32.43	Positive relations with others [76]	-0.13*
Bergen Social Media Addiction Scale (BSMAS)							
9	Worsley, Mansfield, & Corcoran	2018	Not available, online survey	915	Social media users. Age range: 18-25; M-age = 20.19	18-item version of Ryff's Psychological Well-Being Scales (PWBSs; [76])	-0.34**
10	Alheneidi	2019	UK	226	UK-based students (age range: 18-71)	The Student WPQ [75]: positive wellbeing	-0.13*
						The Student WPQ: negative wellbeing	0.28**
			UK	254	UK-based employees (age range: 18-65; M-age=42)	WPQ short form [78]: Positive wellbeing	0.04
						WPQ short form: Negative wellbeing	0.45**

240 *: p. < .05; **: p. < .01

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Discussion

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The impact of Information and Communication Technologies (ICT) and Internet services (e.g., social media) on our daily lives [79], can be surely described both in terms of individual empowerment, as well as in terms of direct impact on well-being. Literature reports how people spending significant amounts of time connected on the Internet, can experience negative outcomes including problematic and addictive behaviors [29,35,80]. Nevertheless, less is known about how measures of social media addiction relate with well-being indicators for non-clinical individuals. Our work contributes with a systematic review in clarifying the relationship emerging by the literature between well-being and Bergen's addiction scales, which are widely adopted by the scientific community as valid measures for social media addiction.

252 In general, the psychological tools thought to capture negative well-being aspects close to
253 psychopathology (i.e., WPQ - Negative Well-being, WHO-5) resulted in having the highest
254 correlation with Bergen's addiction scales [42,49], while the other well-being scales appeared to
255 entertain small or no relationship with BFAS/BSMAS.

256 The fact that WHO-5 had the highest correlation with BFAS is interpretable considering that the
257 WHO-5 is more sensitive towards dimensions particularly impacted by social media usage, as well
258 as connected to depression and anxiety. For instance, a score below 13 in WHO-5 indicates poor
259 wellbeing and is an indication for testing for depression [81,82]. In this sense, the instrument's lower
260 bound appears able to capture and distinguish pathological individuals, which may use Facebook or
261 social media in a dysfunctional way [10,83].

262 Instead, the positive framed well-being measure appeared less connected to BFAS/BSMAS. This
263 effect could be explained considering how low scores on these well-being measures not necessarily
264 imply psychopathology issues, and thus be the outcome of social media addiction. Literature
265 highlighted how psychopathological measures of anxiety and depression entertained small or
266 negligible correlation with flourishing [84] and life satisfaction [85,86], which are respectively EWB
267 and HWB measures.

268 To put it simply, positive and negative framed well-being measures seems characterized by a
269 different sensitivity towards psychopathology, and in particular with anxiety an depression diseases,
270 which have been already connected with a dysfunctional use of social media [10,83]. Thus, this may
271 be the reason behind the different magnitude of the correlation between BFAS/BSMAS and
272 well-being measured considering positive or negative frames. Indeed, we observed an effect size
273 ranging from 20% to 32% for the negative framed measures and from 0% to 12% for the positive ones.
274 The variability of these effects, as well as their size, can also be rooted in cultural and sample-related
275 differences and thus further research appears as needed to define how much sample characteristics
276 matter. The considered studies were realized in different countries (i.e., within different cultural
277 system), and in particular, only 4 out of 10 studies [42,45,46,50] assessed the relation between
278 Bergen's addiction scales and well-being with populations different from college students. Future
279 research should consider different populations, and explicitly account for the more relevant
280 moderating and mediating factors (e.g., age, technological fluency and literacy) reported by the
281 recent literature about human virtual dynamics [87–89], as well as lay the foundations for
282 comparative studies involving different populations.

283 **Moreover, how the different motives behind a dysfunctional social media experience (e.g.,**
284 **excessive need for communication, leisure, belonging) affect people's well-being, should be tested by**
285 **new empirical research. The same scores in terms of addiction could underlie very different**
286 **experiences and thus repercussions on the well-being [90]. The operationalization of well-being is**
287 **another critical issue. A new multidimensional and wider operationalization of well-being is needed**
288 **to understand the "real" magnitude of social media addiction's effect on well-being, since social**
289 **media addiction could impact well-being aspects differently, as it emerged in our work.**

290 **A factorial analysis of the current well-being measures could be useful to define new well-being**
291 **areas and dimensions to study together with social media addiction measures.**

292 In general, most of the considered works underlined a negative, but small, relationship between
293 BFAS/BSMAS and well-being, measured across multiple definitions (e.g., HWB, EWB, psychological
294 well-being) and tools. Therefore, the broader and pervasive use of ICT, and thus social media, does
295 not clearly appear to associate with a severe damage of people's well-being, at least considering the
296 positive framed measures of well-being employed so far. Nonetheless, solutions are called to
297 investigate more deeply, and possibly damp a possible negative impact of ICT on those population
298 that would appear more susceptible in terms of well-being. Moreover, the ICTs and social media
299 could represent promoting factors for people's well-being [91–93], whenever the complex
300 connection between digital life, individual, and psychological features would be understood and
301 modeled.

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