Designing and validating the Social Media Political Participation Scale : an instrument to measure political participation on social media

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Cato Waeterloos[a]*, Michel Walrave[b], and Koen Ponnet[a]

[a] *Department of Communication Sciences, imec-mict-Ghent University, Miriam Makebaplein 1, 9000 Ghent, Belgium;* [b] *Department of Communication Sciences, University of Antwerp, Sint-Jacobstraat 2, 2000 Antwerp, Belgium*

*Corresponding author

CW: Cato.Waeterloos@ugent.be; +32 489 561700; Miriam Makebaplein 1, 9000 Ghent, Belgium

Cato Waeterloos is a researcher at imec-mict-Ghent University (Department of Communication Sciences). In her research, she explores the role of digital and social media platforms in different forms of political and civic participation, expression and activism.

MW: Michel.Walrave@uantwerpen.be; +32 475 459785; Sint-Jacobstraat 2, 2000 Antwerp, Belgium

Michel Walrave (PhD) is a professor at the Department of Communication Sciences of the University of Antwerp and head of the research group MIOS. His research is centered around online self-disclosure and privacy. He investigates individuals' self-disclosure and privacy in interpersonal online communication and interactions between individuals and organizations.

KP: Koen.Ponnet@ugent.be; +32 484 147972; Korte Meer 9, 9000 Ghent, Belgium

Koen Ponnet (PhD in Psychology) works at the Department of Communication Sciences, imec-mict-Ghent University. He conducts research in the field of Health Psychology, Media Psychology and Social Psychology, and examines the determinants of online and offline health and risk behaviors of adolescents and adults.

Abstract

Social media have expanded citizens' political repertoires with new modes of action. To measure these changing political practices, a new instrument, called the Social Media Political Participation Scale was developed and psychometrically tested. The instrument aims to capture both active, expressive forms of political action through social media as well as cognitive political social media use (e.g., sharing posts versus information seeking and acquiring). Based on a literature review and the recommendations of an expert panel, an item pool was generated. The second phase consisted of a questionnaire completed by 595 teenagers. The construct validity was assessed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), as well as convergent validity and internal consistency. The analyses revealed four theoretically grounded constructs measured with 21 items: *latent engagement*, *follower engagement*, *expressive engagement* and *counter engagement*. As a validated instrument, the Social Media Political Participation Scale allows future research to gain a more profound insight into who is politically engaged and why, as well as how digital technologies are embedded in diverse forms of political action.

Keywords: social media; scale development; political participation; civic engagement; validation

1. Introduction

Citizens' ways of participating in civic and political life seem to be ever changing. Digital media have expanded our political repertoires with new modes of action such as using protest hashtags or joining online groups involved in political issues (Theocharis & van Deth, 2018b; van Deth, 2014). In this regard, Bennett and Segerberg (2012) introduced the concept of *connective action*. According to the authors, taking public action has increasingly become an act of personal expression. Hereby, a new logic of participation has emerged where 'sharing' is the starting point of political participation, enabled by various personal communication technologies such as social media (Bennett, 2012; Bennett & Segerberg, 2012).

Given these changing contexts, some authors have argued that it has become necessary to update our notions of what exactly constitutes political participation (Fox, 2013). One of the most frequently cited definitions of political participation is that of Verba and Nie (1987, p. 2): *"those activities by private citizens that are more or less directly aimed at influencing the selection of governmental personnel and/or the actions they take".* A broader understanding of the concept is found in the work of Verba, Schlozman & Brady (1995). Here, political participation is considered as a way to express your voice, with the intention to or the consequence of affecting, directly or indirectly, government action.

Norris (2001), in turn, expands the concept, as political participation might also include those activities which attempt to alter systematic patterns of behaviour. However, the lines between political participation and other related concepts, such as civic participation, have become blurred (Theocharis & van Deth, 2018a), and many authors have called for conceptual clarification (e.g. Ekman and Amnå, 2012; Sairambay, 2020). As a way to conceptualize the social and political mobilization of personal networks through digital technologies, Theocharis (2015) introduced the concept of digitally networked participation (DNP). DNP is defined as "*a networked media–based personalized action that is carried out by individual citizens with the intent to display their own mobilization and activate their social networks in order to raise awareness about, or exert social and political pressures for the solution of a social or political problem"* (Theocharis, 2015, p. 6). Forms of DNP include for example tweeting with

specific hashtags to display mobilization or encouraging others to act on an issue through a social networking site (SNS).

While online participatory acts have been empirically shown to be standalone forms of engaging with politics (Gibson & Cantijoch, 2013; Theocharis et al., 2019; Theocharis & van Deth, 2018b), to date no comprehensive and validated instrument exists to capture this diverse set of behaviours through social media. Moreover, extant literature has pointed to the relevance and conceptual disinctivenss of both expressive forms of online political action, as well as more latent, cognitive, forms of political participation ('political lurking' such as seeking out political pages on social media) (Beam et al., 2016; Ekman & Amnå, 2012; Kushin & Yamamoto, 2010; Wilkins et al., 2019; Yamamoto & Nah, 2017). Therefore, drawing from a growing body of literature, this paper focusses on political participation as both active, expressive forms of political action through social media, as well as cognitive political participation (e.g. sharing posts versus information seeking and acquiring). Hereby, we build on the concept of digitally networked participation as proposed by Theocharis (2015), while adding to the literature by including a cognitive form of individual participation through social media.

Thus, the aim of this study is to develop and test the psychometric properties of a new instrument, called the 'Social Media Political Participation Scale', that captures the complexity of political participation through social media platforms. More specifically, the scale was validated using a high school youth sample. More than towards any other social group, much scholarly attention has gone to the political self-expression of youth and how it relates to internet and social media use (Lane et al., 2019; B. D. Loader et al., 2015; Sebastián Valenzuela et al., 2012; Vitak, 2012). Within studies concerning political participation, youth are often disregarded as being apathetic of politics and disengaged (Boulianne & Theocharis, 2018; Farthing, 2010; Zuckerman, 2014). However, young people are among the most frequent users of social media platforms and seem to be more likely to use social networking sites for political participatory actions (Pew Research Center, 2019; Rainie et al., 2012). Therefore, it might be possible that youth are engaging in politics through 'alternative voicing routes' on social media, that are often not captured in reseach through existing measures (Banaji & Cammaerts, 2015; Earl, 2014; Lane et al., 2019; Portos et al., 2019).

The scale was developed to fit the platform affordances of Facebook. Facebook remains one of the most used social networking sites to date. In the country where this study was performed, Facebook is the biggest social media platform in terms of active users (Vandendriessche & De Marez, 2020). More specifically, 66% of 16- to 18-year-olds use Facebook at least once a week (Vanhaelewyn et al., 2020). Facebook constitutes a central platform for political expression and participation for several reasons. First, it provides an important way for accessing political news and information and gaining knowledge on current events, often referred to as cognitive political social media use (Vromen et al., 2016; Yamamoto et al., 2015). Furthermore, shaped by its technical and social affordances, it provides a unique space for political participation, by allowing to create events, closed groups, posts and pages (Lane, 2019; Literat & Kligler-Vilenchik, 2019). Groups specifically have been found to possess an important networking functionality which fosters political participation (Conroy et al., 2012). In addition, Facebook offers many ways to express political identity, for example by adding so-called Facebook Frames on profile pictures, adding political affiliations on one's 'bio' and the interactive nature of the Facebook news feed (Vitak et al., 2011). Some authors have even suggested that the affordances of Facebook might be more suitable for stimulating collective action than other SNS platforms due to its focus on strong-tie networks (Halpern et al., 2017; Sebastián Valenzuela et al., 2018). Based on these arguments from the literature, Facebook was chosen for the purpose of this study, as it clearly offers a wide array of possibilities to participate politically. As such, the platform fits the study's aim to construct a complex and nuanced measure of political participation on SNS.

From a practical viewpoint, the Social Media Political Participation Scale can be implemented in future studies and survey research to explore the different ways in which people employ social media to inform and express themselves and possibly influence others (both citizens and government) on political and social issues. First, the scale allows researchers to gain insight in who is politically engaged through social media, and why, by comparing different social groups and exploring possible predictors of these behaviours. For example, following the advice of Hooghe and Marien (2013), the scale could be used to study how political trust and scepticism impact different forms of political participation through social media. Second, a validated measure of political participation through social media might elevate existing

studies towards citizens' political repertoires, by capturing a more diverse set of behaviours (Theocharis et al., 2019). Third, as a validated scale, it allows for modification to study specific social and political issues. Also, future research might apply the scale to other social media platforms, in order to assess its validity.

2. Literature review

Questions about how digital media are changing the functioning of democracy, public sphere and our participation in public life, have given rise to miscellaneous academic viewpoints. Within this field of study, the debate is dominated by the views of both cyber-optimists and cyber-pessimists (Zhao, 2014).

Cyber-pessimists remain sceptical about the relevance and effects of digitally mediated engagement. According to these scholars, the internet and digital media have not changed participatory patterns and might even widen existing participatory inequalities, hereby reinforcing the democratic divide (Min, 2010; Norris, 2001; Oser et al., 2013; Zhao, 2014). Illustrative for this scepticism, is the emergence of the slacktivism hypothesis (Morozov, 2012). This hypothesis is centred around the notion that those who engage in low-threshold, often online, forms of political participation (i.e. slacktivism), are prone to dismiss offline modes of participation (Christensen, 2011; Kwak et al., 2018; Piat, 2019). According to Morozov (2012), social media are part of the problem, as they facilitate political participation that often happens for the wrong reasons, being to impress one's friends, rather than for one's commitment to ideas and politics. In addition, some recent scholarly work has pointed to another reason to assume that information and communication technologies have failed to bring forth advanced democratization. Specifically, it is argued that internet censorship and digital surveillance have eroded citizens' agency by chilling political participation and collective action (Stoycheff et al., 2020).

Cyber-optimists have generally stressed the emergence of more engaged citizens due to new technologies and highlight the democratic potential of digital, and especially social media (Bennett & Segerberg, 2012; Mossberger et al., 2007; Tucker et al., 2017). By lowering costs for participation, digital media are assumed to have a possible 'equalizing' effect on political participation, as they allow more voices to be heard (Xenos et al., 2014). An often used framework within this strand of literature is

the gateway model of political participation (Earl, 2014). Underlying this model is the belief that 'thick' participation (a term often used for high-threshold, mostly offline forms of political participation, such as protesting) equals better and more effective participation. In contrast, online modes of political participation are often referred to as 'thin' participation, as they are assumed to be less costly, less time consuming and pose less risk for those participating (Halupka, 2014; Zuckerman, 2014). The gateway model then asserts that those engaged in online forms of participation might, in time, turn to 'thicker', more meaningful offline forms of participation.

Indeed, the majority of empirical studies mirrors this gateway model of political participation (Earl, 2014), also referred to by using a 'ladder metaphor' (Cantijoch et al., 2015) or by looking into possible 'spill-over effects' from the online to the offline realm of participation (e.g. Vitak et al., 2011). Ample studies have been conducted on the relationship between online media use and offline political engagement, such as voting or attending town meetings (Boulianne, 2018; Skoric et al., 2015). Here, different online acts are mostly considered as possible predictors of offline participation, like online news consumption (Gil de Zúñiga et al., 2012; Sebastian Valenzuela, 2013), online political discussion and expression (Gil de Zúñiga et al., 2014; Kwak et al., 2018; Vitak et al., 2011) or general frequency of digital media use (Xenos et al., 2014).

While there is evidence suggesting a positive relationship between digital media use and offline forms of engagement (Boulianne, 2015, 2018; Boulianne & Theocharis, 2018; Skoric et al., 2015), both the claims made by cyber-pessimists and -optimists seem problematic, as they put forward a tone of inferiority towards online participation. Therefore, some have called for a more nuanced stance towards the impact of digital media on political life (Nam, 2012). Earl (2014) for example, argues for a literature were a distribution of offline, online, thin and thick engagement can productively exist. When different forms of political action are valued through research, we can send a message to citizens, and especially young people, to speak their mind (Earl, 2014).

Due to this often implicit tone of inferiority, too little academic attention has been paid to online forms of participation, and participation through social media specifically. Nonetheless, growing scholarly work points to the need to study online and social media political action as independent forms of

participation, as well as valuable additions to citizens' political repertoires (Bennett, 2012; Bennett & Segerberg, 2012; Gibson & Cantijoch, 2013; B. Loader et al., 2014; Vromen et al., 2016). Moreover, Theocharis and van Deth (2018a) found that digitally networked forms of participation constitute a new and conceptually distinct way of participating in politics. Their results further strengthen the notion of online political participation as a proper political act (Oser et al., 2013).

To the best of our knowledge, an instrument that captures the changing modes of political participation through social media is still lacking. Specifically, we aim to tackle two research gaps concerning the measurement of political participation through social media. First, many studies addressing political participation through online platforms mainly include online translations of institutional, offline forms of engagement such as petition signing or contacting officials (e.g. Gil de Zúñiga et al., 2014; Milošević-Đorđević & Žeželj, 2017). Second, most studies that try to capture political engagement through social media do not differentiate between the many possible 'small acts of engagement' that could exist on these platforms (Picone et al., 2019). Therefore, little is known about the different behavioural dimensions that could underly political participation through social media.

3. Methods

3.1 Research design

Following the procedure of DeVellis (2012) a multi-phase scale development approach was used. The study was conducted in two phases, a qualitative and quantitative one. In a first, qualitative, phase we conducted an extensive literature study. Based on the insights gained from previous research and expert consultations, we developed the first pool of items and moved towards a preliminary version of our instrument. In the quantitative phase, we conducted an exploratory and confirmatory factor analysis. Furthermore, we tested for item convergent validity and internal consistency. The analyses in this second phase were based on survey data from a sample of 595 students.

3.2 Phase 1. Item generation and scale development phase

As mentioned above, the aim of this paper is to develop a more nuanced and differentiated measure of political participation through social media. To generate our first pool of items, we reviewed literature

concerning the role of the internet in political and civic participation. In this phase, we searched for studies describing new modes of participation through the internet and social media and how these modes were conceptualized, described and measured (Gibson & Cantijoch, 2013; Theocharis & van Deth, 2018b; van Deth, 2014). More specifically, we researched databases such as Web of Science, as well as Communication Source and Google Scholar using different combinations of keywords such as [*online] or [digital] or [internet] or [social media]* with [*political] or [civic] or [public] or [activist]* and [*expression] or [participation] or [engagement].* An inventory of measures related to online engagement was collected and examined, including for example 'online and social media political expression' (Gil de Zúñiga et al., 2014; Yoo et al., 2017), 'digital political participation' (De Marco, Robles, & Antino, 2014), 'online political action' (Velasquez & LaRose, 2015), 'online activism' (Brunsting & Postmes, 2002) and 'slacktivism' (Noland, 2019). This inventory consisted of 106 items in total.

A first expert panel looked for similarities among the different items and their operationalisations in order to delete double items (i.e., items that, in their essence, measured the same behaviour). This panel consisted of three communication scientists and a media psychologist, from two different universities. The experts were added to the panel based on either their methodological expertise or their knowledge on the topic. Two of the experts have gained extensive expertise in the psychometric validation of research instruments. In addition, one of them is an expert on digital citizenship, participation inequalities and online participation.

At this stage, some of the items were reformulated to fit better into the context and technological affordances of social media as the aim of the study was to develop an instrument to capture political engagement through these platforms. Items that did not fit the purpose of the study or context of social media were omitted, e.g. *'I subscribed to a political listserv'*.

Based on the collected items a preliminary version of the scale was created, consisting of 39 items. Each item covered a distinct behaviour or action tailored to social media (more specifically, Facebook). Based on the different measures and distinctions found throughout our literature study, we identified three themes and six sub-themes within our 39 items. The structure of the subthemes is presented in table 1.

The first theme consists of 'latent forms of engagement' and refers to different behaviours that could be considered as cognitive engagement through information-seeking and -consumption. This theme is derived from literature acknowledging latent and cognitive forms of participation as political behaviours. These 'pre-political' actions are often not directly or visibly aimed at influencing others, but they nonetheless signify a form of involvement in political and social issues. Therefore, they might be of significance for future action (Ekman & Amnå, 2012). The second theme was 'expressive forms of engagement'. This theme consisted of different expressive and visible behaviours aimed at the 'digital audience'. This theme was then divided into four different subthemes: public expressive forms of engagement, group expressive forms of engagement, private expressive forms of engagement and finally platform driven forms of engagement. The third major theme we identified based on literature was 'system forms of engagement', which covered behaviours aimed directly at the political system. Two subthemes were 'within system' and 'counter system'.

Table 1 - Structure of initial themes and subthemes

Theme	**Subtheme**	**Example items**
Latent engagement		I visited Facebook pages or profiles of politicians or public figures
		I read posts linked to a political/social cause on Facebook
Expressive forms of engagement	Public expressive forms of engagement	I posted or shared something (status, photo, meme, link,…) linked to a political/social cause on Facebook in a way it was publicly visible
	Group expressive forms of engagement	I posted or shared something (status, photo, meme, link,…) linked to a political/social cause on Facebook in a closed group
	Private expressive forms of engagement	I sent something (status, photo, meme, link,…) linked to a political/social cause to someone using Facebook Messenger

	Platform driven forms of engagement	I changed my profile picture on Facebook to support a certain political/social cause
System forms of engagement	Within system engagement	I contacted a politician, political party or public figure through a private message on Facebook
	Counter system engagement	I have spread someone's personal information (e.g. phone number, address) without their permission on Facebook in the context of a certain political/social cause

The content validity of the items was assessed both in a quantitative and qualitative way. As recommended by DeVellis (2012), we again consulted our expert panel to evaluate the different items of the scale in terms of wording, grammar, scaling and item allocation. Based on the evaluation of the qualitative expert panel, the preliminary version of the Social Media Political Participation Scale was reduced to a list of 32 items. As certain items still seemed to cover overlapping behaviours, they were grouped together, rephrased or omitted. In a quantitative phase, a new expert panel (n = 14) rated the 32 items in terms of relevance, clarity and simplicity. This second expert panel included communication scientists, a political scientist and psychologists. The political scientist was asked to join the panel based on his expertise on the topic of political and citizen participation. All panel members, except for the political scientist, were members of a research group that has built an extensive expertise in studying the interaction between technology, people and society drawing from theoretical perspectives in communication, psychology, sociology, design and engineering. Consistent with the procedure of Khazaee-Pool et al. (2016) the items were rated on a four point Likert scale, with the possible responses being *1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = very relevant*. Thereafter we calculated the content validity index (CVI) for each item, which is the proportion of experts that rated the item with a score of 3 or 4. A CVI of 0.78 was considered acceptable (Lynn, 1986). In total, six items did not meet this criterion, which was taken into account in the following steps of the validation process to further select items for our scale.

3.3 Phase 2. Testing phase

3.3.1 The main study and the data collection

In order to test the psychometric properties of the Social Media Political Participation Scale, we included the 32 items from the first phase in a questionnaire. In total, 83 high schools were contacted through their official contact information, being email or telephone if available. Each school was asked whether we could conduct a survey among their students of the fifth, sixth and, if applicable, seventh year. In total, eight schools agreed to participate in the study, spread among five different provinces in the country. Subsequently, these schools gave us a list of the specific class groups and their teachers that agreed to participate. Based on their schedules, a date was set to conduct the study. The eligibility criteria to participate in the study were (a) being a student in the fifth, sixth or seventh year of high school and (b) being a student in a Dutch-speaking school in Belgium. Each school received a letter asking for formal permission from the principal. Also, students' parents received a letter stating the aim of the study and asking them to let the researchers know if they did not want their child to participate in the study. The data were collected using paper and pencil questionnaires during school hours. Each student received a letter explaining the topic and purpose of the study, and an informed consent was asked. The initial sample consisted of 689 students. However, after handling the missing data (i.e., we checked for patterns in our missing data and subsequently incomplete surveys were listwise deleted), we obtained a sample of 595 students that we used for the analyses. The study received a positive advice from the ethical committee of Ghent University.

3.3.2 Measures

Besides the items of the scale, we also collected socio-demographic characteristics such as gender (man/woman), age, year in high school (fifth, sixth, seventh) and education type (general, vocational, and technical). Each question related to the scale items was formulated in the following manner: "In the past 6 months, how often have you done any of the following on/through Facebook?". Each item was then rated on a five point Likert-type measure, with 1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often* and 5 = *very often*.

3.3.3. Statistical analysis

In total, 689 teenagers participated in the study. After deletion of incomplete questionnaires, the sample consisted of 595 participants with 59.1% males (n = 351) and 40.9% females. The mean age was 17.15 years old (min = 15, max = 19, SD = 0.85). Characteristics of the study sample can be found in table 2. All analyses were conducted using SPSS 25, except for the confirmatory factor analysis, which was performed using Mplus 8.3. As presented below, several statistical methods were applied to test the psychometric properties of the scale.

Table 2 - Characteristics of the study sample (n = 595)

	n	% of sample
Gender		
Male	351	59.1
Female	243	40.9
Age (years)		
15	6	1.0
16	123	20.7
17	273	46.0
18	159	26.8
19 and above	33	5.6
Year in high school		
5th	283	48.0
6th	303	51.4
7th	4	0.7
Education type		
General secondary education	330	55.7
Vocational secondary education	72	12.2
Technical secondary education	190	32.1

3.4 Construct validity

The 32 items of the scale were used to assess the construct validity of the scale using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Furthermore, item convergent validity was assessed.

3.4.1 Exploratory factor analysis

An exploratory factor analysis was conducted to specify the main factors of our instrument (Boateng et al., 2018). In EFA, it is often recommended to determine the preferable sample size by using the subjects to items ratio. Using this method, an ideal sample size is assessed by making sure the number of respondents is a multiple of the items used in the analysis. An often cited ratio ranges from five to ten respondents per item used (Barrett & Kline, 1981; Mccoach, Gable, & Madura, 2013; Osborne & Costello, 2004). We therefore concluded that our sample of 595 should ensure a fairly stable factor solution, considering our initial item pool consisted of 32 items.

In order to determine the main factors of our scale, principal axis factoring (PAF) with varimax rotation was conducted. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was used, as well as Bartlett's test of sphericity, to assess whether our sample was adequate for factor analysis. To decide upon the number of factors, we used several criteria. Following the Kaiser-Guttman rule, only factors with an eigenvalue above 1 were considered significant for factor extraction (Ferguson & Cox, 1993; Field, 2009)(Field, 2013). To decide upon the deletion of items, several rules were applied. In general, factor loadings are considered meaningful when exceeding 0.40 (Brown, 2014), but a cut-off of 0.32 is also cited for big samples (Tabachnick & Fidell, 2013; Worthington & Whittaker, 2006). Therefore, we considered factor loadings of 0.32 acceptable. Consistent with other studies (Boateng et al., 2018; Worthington & Whittaker, 2006), items with high factor loadings (i.e. 0.40 or above) on more than one factor were omitted, as well as items with cross loadings with less than 0.15 difference from an item's highest factor loading. Also, theoretical relevance was considered as a criterion for possible deletion or retention of certain items.

3.4.2 Confirmatory factor analysis

Confirmatory factor analysis was applied to assess the coherence between the data and the structure. MLM estimator was used to deal with non-normality of the data (Muthén & Muthén, 2017). The fit of the model was evaluated using several fit indices: Chi-square, Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI) and Standardized Root Mean Square Residual (SRMR). The relative Chi-square was interpreted because of the

sensitiveness of the Chi-square to large sample size (Bentler, 1990). In general, a ratio of chi-square to *df* being lower than 2 or 3 is considered as an acceptable fit (Schreiber et al., 2006). The CFI and TLI range from 0 to 1.00, with a cut-off of 0.95 or higher indicating that the model provides a good fit and 0.90 indicating that the model provides an adequate fit (Hu & Bentler, 1999; Ponnet, 2014). Values below 0.06 and below 0.08 are considered indicative of a good fit for RMSEA and SRMR respectively (Brown, 2014; Kline, 2015).

3.4.3 Item convergent validity

Convergent validity is described as the evidence of similarity between the construct measured by the developed instrument (i.e. the Social Media Political Participation Scale) and measures of other constructs that can theoretically be expected to relate to the one tapped by the own instrument (Boateng et al., 2018; DeVellis, 2012). As a form of convergent validity, we assessed item convergent validity by evaluating the correlations between the scores of each item and the scores of each subscale of the Social Media Political Participation Scale. Item convergent validity exists when an item correlates with its own scale. Consequently, we assumed each Spearman correlation coefficient to be higher for the correlation between each item and its respective subscale. Correlation values between 0 and 0.30 were considered very weak, between 0.30 and 0.50 weak, between 0.50 and 0.70 moderate and above 0.70 strong (Moore et al., 2013).

3.5 Reliability: internal consistency

The internal consistency of the subscales as well as the entire Social Media Political Participation Scale was assessed using Cronbach's Alpha coefficient. Alpha values of .70 or higher were considered acceptable (DeVellis, 2012).

4. Results

4.1 Construct validity

4.1.1 Exploratory factor analysis

Exploratory factor analysis was conducted to explore the latent factor structure. The Kaiser-Meyer-Olkin measure was 0.894 and the Bartlett's test of sphericity was significant ($\chi^2 = 11680.998$, $p < 0.001$), indicating adequacy of the sample. As such, six factors emerged with eigenvalues greater than 1.00.

We explored the possible factor solutions by deleting several items in a step-by-step process. Items that loaded highly on more than one factor, as well as items with factor loadings lower than 0.32 were removed from the analysis. Eventually, we obtained a final solution consisting of a 21-item questionnaire, loading on four distinct factors (as shown in table 3). The four factors jointly accounted for 56.65% of the variance. Factor 1 (latent engagement) consisted of five items. A sample item is *'I read comments linked to the climate debate'*. Factor 2 (counter engagement) consisted of four items. A sample item is *'I broke into someone's account to get information about the climate debate'*. Factor 3 (follower engagement) consisted of five items. A sample item is *'I signed a petition on the climate debate after I saw it on Facebook'*. Factor 4 (expressive engagement) consisted of seven items. A sample item is *'I posted or shared something concerning the climate debate in a way it was publicly visible'*. We refer to table 4 for an overview of the 21 items of the scale as well as the mean and standard deviation for each item.

The four factors that emerged from the EFA differ from the initial identified themes (table 1) in the item generation phase. While the latent and counter engagement constructs align with two of the initial themes, the EFA revealed a distinction between 'instigator behaviour' (expressive engagement) versus 'follower behaviour' (follower engagement) that was not derived from the literature during the first phase of this study.

Table 3 - Exploratory factor analysis of the Social Media Political Participation Scale (n = 595)

Item	Factor 1	Factor 2	Factor 3	Factor 4
LE01	**0.876**	-0.019	0.145	0.090
LE02	**0.868**	0.002	0.080	0.068
LE03	**0.828**	0.016	0.077	0.137
LE04	**0.638**	-0.061	0.213	0.193
LE05	**0.616**	0.059	0.264	0.279
CE01	-0.014	**0.859**	0.167	0.086
CE02	0.001	**0.852**	0.078	0.022
CE03	-0.036	**0.832**	0.122	0.101
CE04	-0.033	**0.763**	0.170	0.141
FE01	0.087	0.086	**0.755**	0.167
FE02	0.296	-0.017	**0.649**	0.102
FE03	0.159	0.106	**0.600**	0.162
FE04	0.031	0.192	**0.597**	0.238
FE05	0.133	0.205	**0.586**	0.164
EE01	0.141	0.064	0.191	**0.804**
EE02	0.138	0.037	0.197	**0.784**
EE03	0.200	0.116	0.289	**0.638**
EE04	0.334	0.000	0.352	**0.469**
EE05	0.073	0.352	0.007	**0.395**
EE06	0.118	0.272	0.319	**0.375**
EE07	0.118	0.245	0.332	**0.359**

Note: *LE* Latent engagement, *CE* Counter engagement, *FE* Follower engagement, EE Expressive Engagement

Table 4 - Means and standard deviations for the items of the Social Media Political Participation Scale

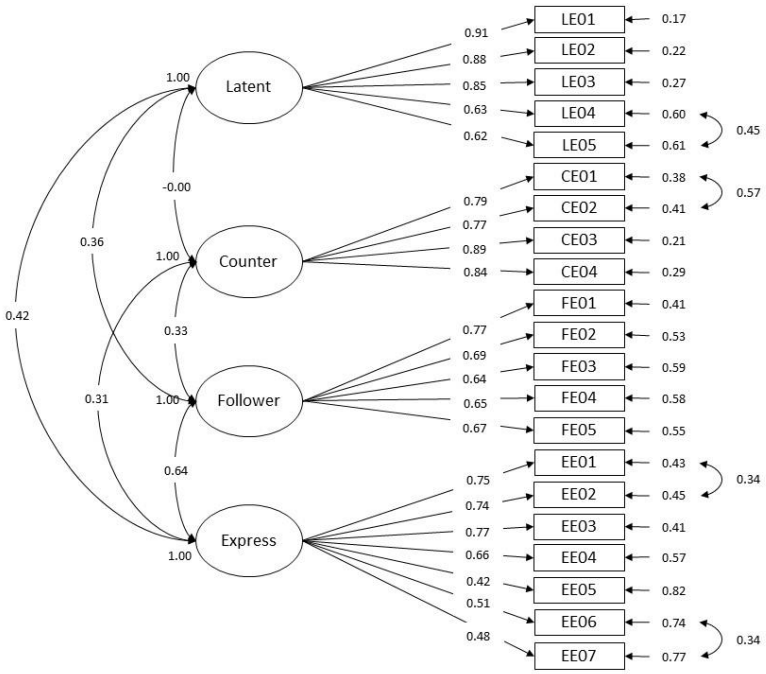
Latent Engagement (LE)		**Mean**	**SD**
LE01	I read posts linked to the climate debate	3.04	1.33
LE02	I read news articles or other kinds of information (e.g. an opinion piece) linked to the climate debate	3.10	1.30
LE03	I read comments linked to the climate debate	2.96	1.42
LE04	I watched videos linked to the climate debate	2.59	1.14
LE05	I visited pages or profiles of politicians or public figures in the context of the climate debate	2.08	1.06
Counter engagement (CE)		**Mean**	**SD**
CE01	I broke into someone's account to get information about the climate debate	1.07	0.44
CE02	I broke into someone's account to post something in their name about the climate debate	1.06	0.38
CE03	I spread someone's personal information (e.g. phone number, address) without their permission in the context of the climate debate	1.07	0.37
CE04	I did something with someone's personal information that was spread on Facebook in the context of the climate debate (e.g. sent a text)	1.08	0.38
Follower engagement (FE)		**Mean**	**SD**
FE01	I shared, spread a Facebook event or invited people for it in the context of the climate debate	1.19	0.58
FE02	I indicated that I would attend or was interested in a Facebook event in the context of the climate debate	1.54	0.91
FE03	I signed a petition on the climate debate after I saw it on Facebook	1.35	0.79
FE04	I shared a petition on the climate debate which was organised by someone else	1.19	0.60
FE05	I became a member of a Facebook group concerning the climate debate	1.20	0.61
Expressive engagement (EE)		**Mean**	**SD**
EE01	I posted or shared something (status, meme, link,…) concerning the climate debate in a closed Facebook group	1.53	0.97
EE02	I commented on something concerning the climate debate in a closed Facebook group	1.52	0.93
EE03	I liked something or reacted with an emotion on something concerning the climate debate in a closed Facebook group	1.78	1.14
EE04	I sent something relating to the climate debate to someone in a private message on Facebook/Messenger	1.94	1.12
EE05	I trolled in the context of the climate debate	1.29	0.78
EE06	I commented on something concerning the climate debate in a way it was publicly visible	1.29	0.71
EE07	I posted or shared something (status, meme, link,…) concerning the climate debate in a way it was publicly visible	1.41	0.87

Note: *LE* Latent engagement, *CE* Counter engagement, *FE* Follower engagement, EE Expressive Engagement

4.1.2 Confirmatory factor analysis

A confirmatory factor analysis was performed on the 21-item questionnaire to test the fitness of the obtained model. The best fitting model is shown in figure 1, which visualizes the four latent constructs (latent, counter, follower and expressive engagement) and the factor loadings for each item on its respective construct. As shown in the model, latent engagement is captured by five items, with factor loadings ranging from 0.62 to 0.91. Counter engagement is captured by four items, with factor loadings ranging 0.77 to 0.89. Follower engagement was captured by five items, with factor loadings ranging from 0.64 to 0.77. Finally, expressive engagement was captured by seven items. Factor loadings ranged from 0.42 to 0.77. In the model, four error covariances were allowed between items that were similarly worded, based on inspection of modification indices (Brown, 2014).

Figure 1 - Four-factor model gained from CFA (n = 595)



Note: LE Latent engagement, *CE* Counter engagement, *FE* Follower engagement, *EE* Expressive Engagement

All fit indexes were satisfactory. The relative chi square (χ^2/df) was equal to 2.51 ($p < 0.001$). The RMSEA of the model was 0.050 (90% CI = 0.045 - 0.056). CFI and TLI were 0.908 and 0.892 respectively. SRMR was 0.078.

4.1.3 Item convergent validity

Table 5 presents the item convergent validity for the Social Media Political Participation Scale. The item-scale correlations indicate good item convergent validity. All coefficients between each item and its respective subscale are higher than 0.50, except for the correlation between EE05 and the Expressive-scale (r = 0.447). Latent engagement and follower engagement had the highest and the lowest item-convergent validity respectively.

Table 5 – Item-scale correlation matrix for the four subscales (n = 595)

Subscales	Latent	Counter	Follower	Expressive
Latent				
LE01	**0.891****	-0.035	0.399**	0.369**
LE02	**0.867****	-0.028	0.331**	0.327**
LE03	**0.877****	-0.008	0.319**	0.365**
LE04	**0.765****	0.018	0.402**	0.410**
LE05	**0.760****	0.117**	0.389**	0.483**
Counter				
CE01	0.008	**0.708****	0.176**	0.240**
CE02	-0.004	**0.707****	0.138**	0.208**
CE03	-0.019	**0.789****	0.159**	0.237**
CE04	0.011	**0.885****	0.233**	0.251**
Follower				
FE01	0.243**	0.225**	**0.581****	0.366**
FE02	0.423**	0.069	**0.827****	0.385**
FE03	0.285**	0.174**	**0.692****	0.375**
FE04	0.163**	0.287**	**0.523****	0.372**
FE05	0.242**	0.316**	**0.545****	0.316**
Expressive				
EE01	0.306**	0.165**	0.332**	**0.727****
EE02	0.281**	0.199**	0.306**	**0.724****
EE03	0.339**	0.197**	0.433**	**0.756****

EE04	0.442**	0.125**	0.486**	**0.731****
EE05	0.135**	0.375**	0.177**	**0.447****
EE06	0.248**	0.360**	0.358**	**0.531****
EE07	0.242**	0.269**	0.351**	**0.537****

Note: The bold data reflect higher item-scale correlation for the four factors of the questionnaire.

***. Correlation is significant at the 0.01 level (2-tailed)*

**. Correlation is significant at the 0.05 level (2-tailed)*

LE Latent engagement, CE Counter engagement, FE Follower engagement, EE Expressive Engagement

4.2 Reliability: internal consistency

The internal consistency of the subscales and the entire scale was assessed using Cronbach's alpha. All alpha values were well above the acceptable threshold of 0.70, indicating good internal consistency and consequently, no items were omitted from the questionnaire in this phase. The Cronbach's alpha for the 21-items scale was 0.88. For the 'latent engagement' subscale the alpha was 0.89, for the 'counter engagement' subscale 0.91, for the 'follower engagement' subscale 0.80 and for the 'expressive engagement' subscale 0.82.

5. Discussion and conclusion

Over the years, growing scholarly attention has gone to the ways citizens employ the internet, and social media in particular, for civic and political purposes. Within this paper, we aimed to develop an instrument to capture political participation through social media. Drawing from a large body of literature towards these new forms of action, we considered 'participation' as both cognitive participation (i.e. information seeking and acquiring) and active, expressive forms of expression through social media (Beam et al., 2016; Kushin & Yamamoto, 2010; Wilkins et al., 2019; Yamamoto & Nah, 2017). Although many scholars have acknowledged the need to shift attention to the changing modes of political action, a solid and extensive instrument to capture these behaviours is still lacking.

This study described the development and psychometric properties of a newly developed instrument, called the Social Media Political Participation Scale, which consists of four theoretically grounded constructs. Five items represent the latent engagement construct, four items represent the counter engagement construct, five items represent the follower engagement construct and seven items represent

the expressive engagement construct. Items included in the *latent engagement* subscale represent different ways for cognitive engagement through information seeking and consumption, through a social media platform (in this case, Facebook). Latent engagement thus signifies a form of involvement in political or social issues, without actively creating or reproducing content (Ekman & Amnå, 2012). The emergence of this construct is theoretically supported as previous studies have found these latent forms of social media behaviour and information seeking behaviours to be relevant, especially when studied in relationship with other forms of political participation (e.g., Kruikemeier, Van Noort, Vliegenthart, & de Vreese, 2014; Wang, 2007). Moreover, several studies have indicated how cognitive, more latent forms of political participation through social media (i.e. information seeking and acquiring) are indeed to be considered as distinct forms of political participation (Beam et al., 2016; Ekman & Amnå, 2012; Kushin & Yamamoto, 2010; Wilkins et al., 2019; Yamamoto & Nah, 2017). The *counter engagement* subscale consists of items describing behaviour that is generally considered controversial, unusual or hurtful and therefore could be considered as a form of 'anti-social behaviour'. We expected counter engagement to emerge as a separate factor, as it was also identified as a separate theme within the 'system engagement' concept, based on our literature review (table 1). The counter engagement items fluctuate around notions of 'hacktivism' (see for example Chen, 2018). This subscale is particularly interesting, as these kind of behaviours are rarely measured within this field of study (Chen, Cheung, & Chan, 2019). In addition, recent studies have pointed to the relevance of these types of action as a strategy to resist repression in certain political contexts (Honari, 2018). The *expressive engagement* and *follower engagement* subscales describe more commonly measured behaviours in the context of political engagement through social media (such as commenting and posting). However, the constructs differ from existing measures in that they take into account current affordances of the Facebook platform in a more elaborate way (Vitak et al., 2011). Moreover, the expressive and follower engagement scales illustrate how different 'levels' of engagement might exist on social media platforms: whereas the expressive items describe forms of content creation initiated by the user, the follower items describe forms of engagement that require some form of action from the user, but the user is not the instigator of the action, nor have they created the original content (such as RSVP to a political event on Facebook which is an observable act, although the event was not necessarily created by the user). This distinction

is relevant, as these different levels of engagement might be explained by different psychological, demographic, technological or contextual characteristics, which are to be explored in future research. The fact that two factors emerge from the initial 'expressive forms of engagement' theme (table 1), indicates how political participation through social media entails a diverse set of behaviours, which are possibly not being captured by existing research (e.g. Gil de Zúñiga et al., 2014; Halpern, Valenzuela, & Katz, 2017; Lin & Chiang, 2017; Rainie et al., 2012).

To our knowledge, this study is the first to report on a validated instrument developed to measure political engagement on a social media platform. The Social Media Political Participation Scale adds significant value to the field, as it consists of 21 items, each capturing different, affordance driven behaviours tailored to a specific social media context. The scale can be implemented in future survey research in its entirety or by implementing the subscales separately. As such, the inclusion of four diverse theoretical constructs in the measure allows researchers to gain a more profound and nuanced insight in the different ways in which social media platforms might be employed for political purposes by citizens. A valid and reliable instrument allows future research to study political participation on social media in different contexts in a comparative manner. Furthermore, the instrument allows for modification to different platforms and specific political or social cases. For example, the item *'Signed a petition on the climate debate after you saw it on Facebook'* can be easily modified to fit another public issue (e.g. by changing the word 'climate debate' into 'LGBTQ+ rights') or another social platform (e.g. by changing 'Facebook' into 'Twitter'). We believe our scale can be helpful to identify those groups in society who are engaging in political and civic life, how they do so and why. Especially young citizens are often studied in this context, as the question whether they are to be considered as politically innovative or apathetic still occupies many researchers (Boulianne & Theocharis, 2018; Lane, 2019; Lane et al., 2019). Thus, by including a nuanced measure for political participation through social media platforms, citizens' political repertoires can be studied in a more comprehensive and possibly, more realistic manner. This in turn might be of interest to policymakers and educators, as they increasingly struggle with questions about how to engage citizens and involve them in decision making processes.

6. Limitations

This study has several limitations that should be mentioned. First, regarding the sampling, a convenience sample of high school students in Belgium was used. Our sample is heterogeneous albeit not representative, which limits the generalizability of our findings. It would be valuable if future research could investigate the validity and reliability of the Social Media Political Participation Scale among other social groups and in other geographical contexts. Nonetheless, we strived for geographical diversity within our sample, making sure we included a school from every province in the country. Another possible limitation to the study was the specific research focus, which impacted the wording of the items of the scale. The wording of the items in this study was tailored to the recent climate strikes and protests in the country. We would encourage future studies to employ the Social Media Political Participation Scale to assess political participation through social media for other political cases as well. Moreover, our instrument was constructed with the affordances of the Facebook platform in mind. Therefore, it would be especially valuable if future studies could assess the applicability of the scale in the context of other SNS such as Twitter. Finally, the scale could be especially useful if combined with observed behavioural data, as to further establish the validity of the instrument as well as increase our understanding of political behaviour through social media, as had been suggested in some recent studies in the field (Ferrucci et al., 2019; Guess et al., 2019).

These limitations notwithstanding, the results of this study have indicated that the Social Media Political Participation Scale is a valid and reliable instrument that allows to capture how citizens today employ social media, in order to inform themselves and to use these platforms as a means for expression and hereby possibly influence others and exert pressure on public actors.

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