



Reach and Recruitment of Microentrepreneurs: Lessons from a Finnish Health Promotion Intervention¹

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**ABSTRACT**

Even though entrepreneurial work is stressful, health promotion interventions are seldom targeted at entrepreneurs, and we know little about how to reach and recruit this hard-to-reach group to such studies. We described and evaluated the recruitment process of a mobile health application intervention study aimed at enhancing work ability and recovery. Finnish microentrepreneurs (N = 1243) were registered for the intervention. We analyzed surveys, interviews, and registration data. Most participants registered through email invitations. The registered microentrepreneurs were not representative of all Finnish microentrepreneurs; females and highly educated individuals were overrepresented, and those working in agriculture were underrepresented. Differences between registration routes were observed: females registered more often through the self-enrollment route, whereas males and older entrepreneurs registered more often through email invitations. The findings indicate that recruitment strategies are associated with participant characteristics. To increase participation rates, persuasive recruitment approaches are needed.

KEYWORDS

Entrepreneurs / Finland / intervention / mobile health application / process evaluation / reach / recovery / recruitment / work ability

Introduction

There are 1.6 million microenterprises in Nordic countries, comprising 93% of all Nordic enterprises and ranging from 89% of all Danish enterprises to 95% of all Swedish enterprises (Eurostat 2021). According to the European Commission (2003), a microenterprise is a small company that meets at least two of the following criteria: employ less than 10 people with a balance sheet or turnover of less than 2 million euros. Microentrepreneurs are the owner-managers of microenterprises. Also, the number of nonstandard employments, such as self-employment, is increasing (Larsen & Ilsøe 2019). Solo self-employment refers to people who work in their own businesses but do not employ anyone else (Rasmussen et al. 2019). In the Nordic countries, a total of 57% of enterprises are run by solo self-employed people (Eurostat 2021). The current paper analyzes the reach and recruitment of microentrepreneurs to a health promotion intervention study in Finland.

On average, Finnish entrepreneurs report lower job satisfaction than entrepreneurs in Europe, and Finnish entrepreneurs' job satisfaction is lower compared with entrepreneurs from other Nordic countries (Statistics Finland 2018). Further, several stressors are related to entrepreneurs' work, such as inability to detach from work, financial problems, and occupational loneliness (Kollmann et al. 2019; Mäkinie mi et al. 2021). Entrepreneurs' work has been characterized as having longer working hours (Eurofound 2017; Statistics Finland 2018) and lower security (McMullen & Shepherd 2006) than salaried workers. For instance, mortality rates among Swedish self-employed people in the trade and transportation or welfare industry are higher than among paid employees (Toivanen et al. 2016), and in Finland, agriculture entrepreneurs particularly report high job demands and poor work ability (Saarni et al. 2008; Statistics Finland 2018). Moreover, entrepreneurs often do not have the same level of support for well-being at work as salaried workers. For example, less than half of Finnish entrepreneurs have (organized) a voluntary contract with occupational health services (The Association of Finnish Entrepreneurs 2019), and according to Swedish occupational safety and

health inspectors, the Swedish occupational safety and health regulatory system neglects the specific needs of microenterprises (Hagqvist et al. 2020). Therefore, new ways to enhance the work well-being of entrepreneurs are needed.

Regardless of the increased prevalence of solo self-employment and microentrepreneurship, as well as the identified stressors associated with entrepreneurs' work, most studies related to work well-being have been conducted among individuals in standard employment (c.f. Wiklund et al. 2019). For example, a literature review regarding interventions aiming to improve recovery from work did not find any studies focused on microentrepreneurs (Verbeek et al. 2019). One reason may be that entrepreneurs in small and medium-sized enterprises (SMEs) tend to not engage in studies and health promotion programs because of a lack of time, financial resources, and mistrust of health promotion activities (Dawkins et al. 2018; Martin et al. 2015). Therefore, the current paper aims to describe and evaluate the reach and recruitment of microentrepreneurs to a mobile health application intervention study.

The recruitment of participants is a critical factor for the success of any study. For instance, a lack of participants can hamper reaching adequate power to detect statistical significance. In particular, intervention studies struggle with motivating suitable participants to engage in them, and some target groups, such as entrepreneurs, seem to be more difficult to reach than others (Dawkins et al. 2018; Donovan et al. 2016). Further, although the recruitment of participants is resource intensive, there is a lack of studies analyzing effective recruitment strategies (Byrd-Bredbenner et al. 2017), and often, recruitment methods are not reported in detail (Estabrooks et al. 2017). Therefore, there is a need to share examples of recruitment strategies and processes to improve participation rates.

The recruitment of participants is not always systematically designed or implemented. Nowadays, interventions are theory driven, but recruitment is implemented more intuitively. For example, although we identified studies analyzing recruitment processes (e.g., Caldwell et al. 2010; Dawkins et al. 2018), we could not locate any established theory or framework on how to reach and recruit. Nevertheless, the way recruitment processes are implemented relates not only to the level of consent rates but also to the types of participants. One systematic review concluded that those recruitment strategies that increase potential participants' awareness by engaging them in the learning process of the problem being studied increase consent rates (Caldwell et al. 2010). Furthermore, when active (i.e., direct interaction with the potential participants) and passive (i.e., no direct interaction) recruitment strategies were compared, those participants who were recruited via passive methods were more likely to be women and have higher income and education than those recruited via active methods (Estabrooks et al. 2017). Hence, recruitment should be adjusted to the target population because the approaches that are effective in one population might not necessarily be effective in others (cf. UyBico et al. 2007). Recruitment strategies or marketing activities are not the only factors associated with the effectiveness of reach and recruitment. Potential participants' perceptions, attitudes (e.g., general trust in research), and motivation (e.g., willingness to behavior change), as well as features of intervention, may also affect the willingness of potential participants to take part (Cuijpers et al. 2010; Nielsen & Randal 2013).

Moreover, the reach and recruitment of participants to interventions are not often systematically evaluated after the study (e.g., Murta et al. 2007; Moore et al. 2015), even



though a process evaluation is an important part of an intervention (Moore et al. 2015; Nielsen & Randal 2013). A process evaluation complements analyses of an overall outcome evaluation by answering the questions of why and how interventions succeed or fail (Nielsen & Noblet 2018, p. 14). According to Nielsen and Randal (2013), it is important to focus on contextual factors, intervention implementation, and participants' mental models (e.g., attitudes and motives toward intervention) in process evaluations. When evaluating the reach of an intervention, one can focus on the extent to which the intervention reached its intended target group and on the participating motives. In the evaluation of the recruitment for an intervention, one can describe and analyze recruitment procedures while identifying the facilitators and barriers to it (cf. Moore et al. 2015; Murta et al. 2007).

The current study aims to describe and evaluate the reach and recruitment process of the randomized controlled trial called 'The Effects of Counselling Delivered Through Native Mobile Application on Work Ability and Work Recovery Among Micro-entrepreneurs' (ClinicalTrials.gov Identifier: NCT03648593). The intervention aimed to enhance work ability and recovery from work (Laitinen et al. 2020). The original aim was to recruit at least 700 microentrepreneurs: 350 participants for the intervention and control groups. The Finnish micro-entrepreneurs who participated (N = 1243) in the intervention had access to a mobile health (mHealth) application. The application was designed to support beneficial health behavior change (Oinas-Kukkonen 2013). The app was developed especially for microentrepreneurs and only for the Android operating system (Laitinen et al. 2020). The intervention setup included a baseline survey and follow-up questionnaires at 2, 6, and 8 months. After a 2-month usage period of the app, 59 interviews were conducted with the participants in the intervention group. The Ethics Committee of the Finnish Institute of Occupational Health gave ethics approval in November 2017. The intervention and the development of its content is described in detail in the studies by Laitinen et al. (2020) and Tiitinen et al. (2020).

The following are the research questions that guided the process evaluation:

- RQ 1. How effective were different recruitment efforts in motivating Finnish microentrepreneurs to register in the intervention?
- RQ 2. Where did microentrepreneurs learn about the intervention?
- RQ 3. Why did microentrepreneurs decide to take part?
- RQ 4: What kind of microentrepreneurs engaged, and how well do they represent Finnish (micro)entrepreneurs in general?
- RQ 5: How do the recruited participants, namely, self-enrolled ones and those invited via email, differ from each other?

Methods and materials

In section 'Recruitment campaign and registration routes', we describe how we reached and recruited potential participants and how prior knowledge and theories were used in designing the recruitment activities. Then, in section 'Data collection and analysis', we describe what kind of mixed methods research approach with quantitative and qualitative methods was used to evaluate the recruitment after the participants had been

reached, registered, and engaged in the study; the section provides information on which methods were used to answer the specific research questions.

Recruitment campaign and registration routes

Two main strategies were used to reach and recruit potential participants. There were two different routes for registering: those who received the personal email invitation registered for the study via personal link, and those who were reached by the media campaign were guided to the website where they self-enrolled. The total cost of the recruitment campaign without working contributions was about 27,000 euros. The cost of email invitations without including the cost of work contributions was about 10,000 euros. The cost of the supportive media campaign without including the cost of work contributions was about 17,400 euros (main costs being videos: around 4000 euros; radio campaign: around 10,000 euros plus taxes; ads in magazines about 1500 euros; and visibility in different events: around 1000 euros).

First route: A personal email invitation

The email addresses of microentrepreneurs were obtained from Bisnode Finland, a commercial enterprise data register company, with the final total register base of microenterprises being 74,971 (Laitinen et al. 2020). Some of the identified microentrepreneurs did not have a working email address; therefore, email invitations could be sent to 73046 microentrepreneurs. The first email invitations were sent in January 2018. The participants invited via email received at least two email reminders.

Prior findings on effective recruitment processes—as well as on behavior change methods and the principles of effective and persuasive communication—were applied in preparing the emails (for a review of principles, see Kok et al. 2016). We also adjusted and tailored the message with our target group in mind (cf. UyBico et al. 2007). First, we aimed to write in a way that elicits reflection about whether there is a personal need for better work ability and recovery (cf. need, Nielsen & Randal 2013); in practice, we used expressions such as ‘Do you burn out or do you recover’ and ‘Are you worried about your coping/well-being at work?’ In addition, the principles of posing relevant arguments and highlighting relevance and value were utilized (cf. Kok et al. 2016). In the email, we focused especially on the link between work well-being and productivity because based on our prior experiences of working with entrepreneurs, this could be a relevant point for our target group. In practice, we wrote the following text in the email: ‘Why is it worth participating? Good recovery is important for your work ability and your business success. By taking care of yourself, you enhance your productivity, energetic client service, and creativity. The Recovery! application supports your well-being and recovery from work.’ Furthermore, author credibility was enhanced by listing all the participating research institutes and universities at the end of the message and mentioning that the ‘[E]asy-to-use application is designed based on the latest scientific developments’. Because we knew beforehand that microentrepreneurs often have long and nonstandard working hours (cf. Statistics Finland 2018), we also highlighted in the e-mail that the application can be used at times appropriate for the user. Novelty value



was enhanced by telling that the application is only available for those participating in the study.

Second route: Supportive media campaign with the self-enrolling option

Based on prior findings that mere email invitations may not be enough to attract many participants (cf. Caldwell et al. 2010), we planned a supportive media campaign with a self-enrollment option via the project's website. The supportive campaign aimed to 1) raise awareness of recovery from work among microentrepreneurs, 2) increase microentrepreneurs' readiness toward achieving better work ability, and 3) get them to enroll in the study via the web page of the coordinating research organization. Self-enrollment took place via HubSpot (see www.hubspot.com). The self-enrolled participants received regular motivational messages from HubSpot before the start of the intervention.

The supportive 18-week media campaign was implemented between November 2017 and January 2018. The main marketing actions are presented in Table 1. A wide range of media channels was chosen to reach and attract different types of microentrepreneurs. This was considered important because microentrepreneurs are a very heterogeneous group; for example, they work in various professions. The contents of the campaign were chosen with the same principles in mind. For example, in the videos and posters, different types of entrepreneurs (males and females from different professions and age groups) presented their own stories regarding recovery. The radio stations and playing times of the radio advertisement were chosen to reach middle-aged male entrepreneurs because we estimated that this group would be more difficult to reach and less likely to participate than other entrepreneurs.

When planning the content of the campaign, different behavior change methods were again utilized (Kok et al. 2016). We also obtained the opinions of the entrepreneurs regarding the ways and styles of the campaign. For example, a modeling method was used in the posters and videos to boost the entrepreneurs' self-efficacy, particularly their ability to achieve better recovery from work. The videos and posters were based on the idea that seeing other entrepreneurs' practical examples of how to act toward better recovery from work would not only create positive social pressure and provide social support, but also give information on social norms (others' approval). To support the identification, it was considered important that selected 'role models' represent 'ordinary' microentrepreneurs so they would not be, for instance, public figures. For example, in one social media poster, a male microentrepreneur describes practical ways to enhance recovery and well-being: 'Always when help is needed there, I jump behind the wheel by myself. When I have my vacation, I always go to other landscapes being able to detach from work. I also play badminton, floorball, and golf, and I go for a run.'

Moreover, the campaign aimed to support autonomy and reflection (Bandura 1986; Bartholomew et al. 2011; Kelder et al. 2015; Kok et al. 2016). Reflection was supported, for instance, by asking (e.g., Do you burn out?) instead of just proposing or stating. For example, the following text was used in newspaper ads: 'Entrepreneur—do you burn out or recover? The new free mobile application "Recovery!" helps you in recovering from work and to feel better. You get it when you participate in the study aiming to support work ability.' Because we knew that Finnish entrepreneurs working in farming and agriculture often report poor workability (Saarni et al. 2008; Statistics Finland 2018),

the ads were published in the newspapers read most often by farmers and those living in rural areas.

Regarding the radio campaign, the principles of the elaboration likelihood model (e.g., Petty et al. 2009) were utilized in designing the advertisements to increase the likelihood that the entrepreneurs noticed the messages and processed them carefully (central route processing). Three different radio advertisements were designed to include elements of personal relevance and surprise to increase entrepreneurs' motivation to consider and reflect on the arguments presented (cf. Kok et al. 2016). These arguments were related to the entrepreneurs' experiences and change in common beliefs (e.g., from 'breaks are for lazy people' to 'breaks are not for lazy people'). The messages were repeated to support recall and the ability to reflect on the arguments.

As summarized in Table 1, we utilized digital, audio, and print media channels, as well as some face-to-face encounters with the entrepreneurs. More specifically, the campaign included nine YouTube videos, 12 commercial social media posters, and four blog texts, which could be shared and advertised on social media channels (e.g., Facebook and Twitter). Also, two press releases, a 2-week nationwide radio campaign with three

Table 1 The main marketing actions of a media campaign and number of self-enrolled participants by week

Campaign weeks (n = 18)	1*	2	3	4	5	6	7	8	9*	10	11	12	13	14	15*	16	17	18
Self-enrolled participants (n = 770)	70	5	0	52	30	25	39	62	142	18	27	12	64	57	101	35	22	9
Self-enrolling opens 18.10.2017	x																	
Marketing actions																		
Events	x			x		x	x											x
Newsletters and web texts via entrepreneur associations and insurance company				x	x				x									x
Expert videos via entrepreneur associations									x									
Facebook campaign				x	x	x	x			x	x	x	x	x				x
Blog texts and other types of web texts						x		x	x		x							
Articles in newspapers and magazines				x						x								
Ads in newspapers											x	x						
Radio campaign													x	x				
Self-enrolling closes 17.2.2018																		x

Note. *a peak week with at least 70 self-enrolled



different advertisements, five articles, and three advertisements in wide-circulation newspapers were produced. Printed handouts and flyers (of two different types) were distributed in events or mailed to relevant entrepreneur organizations. The researchers also participated in events that targeted entrepreneurs and other relevant events (14 events in total). Regarding the distribution of digital content, researcher, research groups, interest groups, and stakeholder social media networks (Facebook, Twitter, YouTube, LinkedIn) were utilized. Entrepreneur umbrella organizations and regional groups (more than 120,000 members) and stakeholders, such as a pension insurance company (35,000 contacts), cooperated by distributing the information about the study in their newsletters and web pages. In addition, the expert YouTube videos about recovery from work were made and delivered in collaboration with the entrepreneurial associations. These videos included information about the phenomenon, as well as knowledge about how to improve recovery and workability. Therefore, they aimed to increase potential participants' awareness by engaging them in the learning process about the phenomenon (cf. Caldwell et al. 2010).

Data collection and analysis

The most motivating recruitment efforts (RQ 1)

To identify the most effective recruitment efforts, all marketing actions in the supportive media campaign were first documented and listed on a daily and weekly basis. Then, after the self-registration period ended, the number of self-enrolled microentrepreneurs via HubSpot was calculated. First, the weeks with the highest registration peaks were identified. Then, we descriptively analyzed the kinds of marketing actions done during the days of the peaks, as well as during the days preceding and following the peaks.

Main sources of information about the intervention (RQ 2)

To measure from where the registered microentrepreneurs received information about the intervention, they were asked how they learned about the study as a part of the first follow-up questionnaire at 2 months. The intervention setup included a baseline survey and follow-up questionnaires at 2, 6, and 8 months (Laitinen et al. 2020). They were instructed to choose all applicable options from a setlist (e.g., email invitation, entrepreneur organization's newsletter, Facebook, a radio campaign, don't remember).

Main participation motives (RQ 3)

As a part of the interviews, the question 'Why did you decide to take part in the study?' was asked to explore motives. The participants (N = 59) for the one-on-one interviews were recruited from those who had registered to the intervention and responded to the baseline survey, who were in the intervention group, and who had given their consent in the baseline survey to be contacted for an interview. Those who had given their consent to be contacted were randomized into two lists: one for interviews with more technological emphasis and one for interviews with health-related emphasis. The interviewees

were recruited mainly via telephone calls, though email and/or SMS were also used in case telephone calls were not an option (e.g., if the participant requested contact via email). The semistructured interviews were conducted via Skype, with telephone calls as a backup option in case of technical difficulties. The interviews were recorded and transcribed verbatim. The duration of the interviews ranged from 18 to 114 minutes, with an average length of 53 minutes. The informed consent of the participants was sought. For the interviews, 31 of the interviewees were female, and 28 were male. However, the demographics of the interviewees were not interlinked with the interviews in the analyses. In addition to providing information for the process evaluation, these interviews aimed to study microentrepreneurs' professional identity, lifestyle, recovery from work, and usability and the features of the application. Results not directly related to process evaluation were reported elsewhere (e.g., Kekkonen et al. 2019). In the first phase of the qualitative content analysis, all the interviews were read through by the researcher to identify all expressions concerning participation motives. The identified expressions were then brought together. Based on the similarity of meanings, general, main, and subcategories were constructed (cf. Elo & Kyngäs 2008; Graneheim & Lundman 2004). Then, another researcher read through half of the interviews and made her categorizations. Finally, these two researchers discussed, refined, and named categories and decided on the final categorization together.

Participants' characteristics and representativeness (RQ 4)

To describe and analyze the representativeness of the sample as a part of the baseline survey, all registered participants were asked to indicate their gender, business ID, age, and education. The Standard Industrial Classification TOL 2008 by Statistics Finland (2008) was used to identify and categorize the participants' businesses based on the business IDs. Two different comparative datasets were used. A comparative dataset for analyzing how well the participants' business lines represent those of Finnish microenterprises came from the structural business and financial statement statistics from Statistics Finland (2019), which provides information about Finnish microenterprises; this was a (micro)enterprise-level statistic. Furthermore, a comparative dataset for comparing how well the participants represent Finnish entrepreneurs in terms of demographics came from the Yrittäjät Suomessa 2017 report by Statistics Finland (2018). The report is the only one available that provides information on the statistics of any type of Finnish entrepreneur (N = 2916) at the individual level. Hence, because there appears to be no individual-level statistical information about Finnish microentrepreneurs, we had to make a comparison to Finnish entrepreneurs. However, it is worth noting that about 95% of Finnish enterprises are microenterprises and, therefore, most entrepreneurs are microentrepreneurs (Statistics Finland 2019). To compare whether our dataset and comparative datasets differed, 95% confidence intervals were calculated.

Participants' demographic variation between registration routes (RQ 5)

Finally, a Chi-square test of independence and an independent samples t-test were performed to examine the relationship between registration routes and demographics,

which is essential to discover how much recruited participants—namely, self-enrolled ones and those invited via email—differ from each other.

Results

Reached and registered microentrepreneurs

As a result of the recruitment campaign, a total of 1243 microentrepreneurs registered and answered the baseline survey; 87.1% were self-employed, not acting as an employer entrepreneur. A total of 42.4% ($n = 524$) registered via self-enrollment, and 57.8% ($n = 719$) registered via the email invitation route (see Table 2). Therefore, the objective of recruiting at least 700 microentrepreneurs was achieved. Meanwhile, only about 1% of those who were invited via email ($n = 73,046$) registered and answered the baseline survey. However, considering that there are about 340,000 microenterprises in Finland, the reach of the email invitation was considered good (the reach was about 21.5% of Finnish microenterprises).

Table 2 Flow of the participants ($N = 1243$) by route

	Email invitation route	Self-enrollment route
Email addresses obtained from a data register company	74,971	
Emails sent to those with a working email address	73,046	
Micro-entrepreneurs who self-enrolled		770
Participants = microentrepreneurs who registered and answered to the baseline survey	719	524

It is not clear how many Finnish microentrepreneurs received information about the study from the media campaign. However, as an example, the radio campaign's targeted reach was about 22,000 potential male participants, and one of the newspapers that published an advertisement about the intervention had a circulation of about 77,000 papers (with more than 300,000 readers), mostly among Finnish farmers. Therefore, the media campaign was able to reach thousands of potential participants. For example, videos on YouTube were viewed 6426 times, and tweets with the project's hashtag (#promootwork) were viewed 112,386 times from October 18, 2017, to February 17, 2018. Naturally, potential participants may have received information from many sources.

The most effective recruitment efforts (RQ 1)

To identify the most effective recruitment efforts, the registration peaks during the supporting media campaign were analyzed. The campaign and associated self-enrollment lasted about 18 weeks, that is, from October 18, 2017, to February 17, 2018. As

presented in Table 1 and Figure 1, three distinctive self-enrollment peak weeks emerged: the first (with 70 registrations), ninth (with 142 registrations), and fifteenth weeks (with 101 registrations) of the campaign. A total of 40.6% ($n = 313$) of all the self-enrolled participants ($N = 770$) enrolled during these three 'peak weeks'. In the following, we analyze the three peaks in more detail.

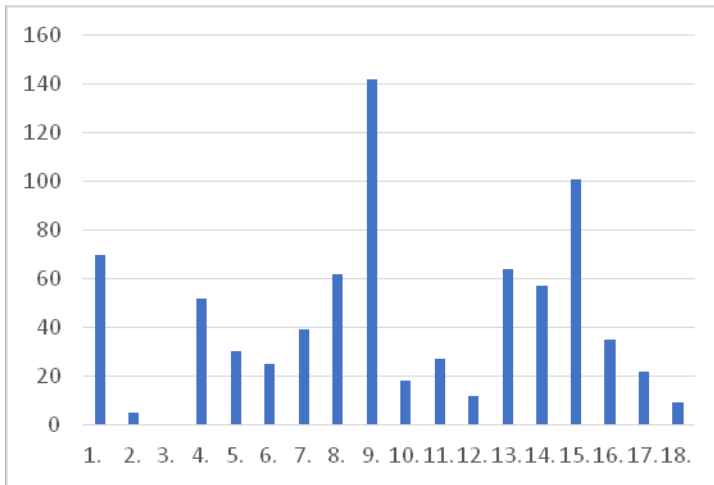


Figure 1 Number of self-enrolled participants ($N = 770$) weekly between October 18, 2017, and February 16, 2018.

By analyzing the nature of the marketing activities during and around the peaks shown in Figure 1, one could identify the most effective activities. The first peak appeared at the beginning of the recruitment campaign, namely, in the first week of self-enrolling and just after the pilot test phase and its recruitment campaign (October 2 to 16, 2017). During this time, there were also events targeting microentrepreneurs. In these events, the intervention study was presented, and the participants were invited to register. The pilot test, which aimed to test both the application and recruitment processes, was targeted toward persons who work/act like microentrepreneurs but are not microentrepreneurs (e.g., entrepreneurs with more than 10 employees). Therefore, they represented the target group of the actual intervention study, but they did not belong to the actual target group. As a part of the pilot test's recruitment campaign (e.g., email invitations, Facebook page, and web page), microentrepreneurs were informed to register in the actual intervention via self-registration, as they also did (Table 1; Figure 1).

The second self-registration peak, which was the highest peak, appeared in the ninth week of the campaign. What characterizes marketing activities just before the peak is that most were produced and delivered in cooperation with entrepreneurs and entrepreneur associations. For example, local entrepreneur organizations delivered information about the intervention study to entrepreneurs through newsletters, and the Federation of Finnish Enterprises produced and delivered four expert videos on

entrepreneurial well-being (e.g., stress and recovery), which aimed to raise awareness and motivation to participate. The videos also made it possible to learn about the phenomenon. The campaign was promoted as a part of different web content (e.g., blog posts and the advent calendar of one of the participating research institutions). Unfortunately, we do not know exactly how long it took from seeing the media content to the participants registering and whether media activities (e.g., events) made at the eight or seventh week may have boosted the registration peak at week nine (Table 1; Figure 1).

The third peak appeared in the fifteenth week of the recruitment campaign (Figure 1). During this time, information about the intervention was delivered through the entrepreneur's associations with two face-to-face events and on their webpages. The sponsored social media campaign on Facebook, with videos and social media posters, continued. The press release was published on webpages and sent to several media. In addition, the 3-week radio campaign, especially targeting male entrepreneurs aged around 45 to 54 years, ended at the end of the fourteenth week of the campaign, which may have also boosted registration (Table 1; Figure 1).

Main sources of information about the intervention (RQ 2)

The results of the first follow-up survey (N = 594) show that all selected information sources differed statistically significantly by registration route (Table 3). The email invitation was the most frequently mentioned information source among the participants from both registration routes, but it was mentioned more often by the email-invited than the self-enrolled participants. Among the email-invited participants, the newsletter from the entrepreneur organization or insurance company, the entrepreneur organization's

Table 3 Sources of information cited in the first follow-up survey (N = 594)

Sources of information	Self-enrolled (n = 288)		Email invited (n = 306)		Total (n = 594)	
	n	%	n	%	n	%
Email invitation	102	35.4	237	77.5	339	57.1
Newsletter	47	16.3	14	4.6	61	10.3
Entrepreneur organization's webpage	25	8.7	8	2.6	33	5.6
Event	7	2.4	0	0.0	7	1.2
Newspaper	7	2.4	1	0.3	8	1.3
Radio campaign	8	2.8	1	0.3	9	1.5
Social media	34	11.8	4	1.3	38	6.4
Friends or other entrepreneurs	13	4.5	0	0.0	13	2.2
From elsewhere	7	2.4	0	0.0	7	1.2
Don't remember	68	23.6	50	16.3	118	19.9
Total ^a	318	110.3	315	102.9	633	106.7

Note. ^aThe total exceeds the number of participants because some participants cited more than one information source.

web page, and social media were also mentioned to some extent. Among the self-enrolled participants, after the email invitation, the three most frequently mentioned sources were the newsletter, social media, and the entrepreneur organization's webpage. A total of 92% of those who cited any source of information reported only one source, whereas 6.8% reported two sources and 1.3% cited three sources. One-fifth of all the participants indicated not remembering where they had learned about the intervention. Taken together, the survey data indicate that email was the most typical source of information about the study, with entrepreneur organization and social media (especially Facebook) being mentioned somewhat frequently (Table 3). Many participants had difficulties recalling the source.

Main participation motives (RQ 3)

The analysis of the interviews (N = 59) revealed three main categories concerning the participating motives, namely, personal need, general interest, and learning for the business (see Table 4). The most frequently mentioned motive was personal need (in 37 answers). The personal need category included eight subcategories related to the needs to cope with demands, improve work ability, and adopt a healthy lifestyle. First, the need to cope better with an ongoing challenging situation and to cope with stress were considered the most important motives for participating. For example, one of the interviewees described their challenging situation and the need to cope with it as follows: 'Let's say that I had an idea, that if I would get somehow something new, that would help me to cope. At the moment, I'm quite exhausted'. Furthermore, the interviewees perceived a need to improve their work ability through diverging concrete strategies, such as enhancing better recovery from work, focusing more on time management, and improving work-life-leisure balance. Also, some interviewees expressed that they joined the intervention because they wanted to change their lifestyle, specifically their sleeping, exercise, and eating habits. This shows that the interviewees seemed aware that they needed to implement changes in their lifestyles. Some had already thought about it and tried to find a solution. Therefore, the possibility of taking part in the intervention seemed to serve as a first step toward improving the situation: '... so I thought one has to try something, and that is how it started'. The second most frequent main category was general interest (in 22 answers) (e.g., 'I was very much interested in, that this, like how this could help me be in control, to control to cope, that yes, I thought about this in a way, that this could become a kind of tool'). First, there appeared a general curiosity regarding the topic, as well as a more specific interest in the tool, namely, for the possibility of testing a new mobile application. Also, some interviewees were motivated to learn more about work ability, recovery, and well-being in general, not necessarily aiming to change anything. The third main category and motive of participation was learning more for the benefit of the business (in 8 answers). Some interviewees were motivated to develop their businesses by learning and finding new ideas through participation (e.g., 'Well, this whole subject and I was also interested in that application, that could it be something, which could work as a tool? For example, for my own customers.') So, this motive relates to the fact that some of the participants were selling services in the area of well-being. Two respondents did not answer this question (Table 4).

**Table 4** Summary of the participating motives (N = 59)**Personal needs**

Cope with a challenging situation
 Cope with stress
 Recovery from work
 Time management
 Balancing work and leisure
 Better sleep
 Exercise
 Changing eating habits

General interest

Novel tool (i.e., application)
 General curiosity
 New information

Learning more for the business

Improving business
 Helping customers

Participants' characteristics and representativeness (RQ 4)

Among those who registered for the intervention and who answered the first baseline survey, about 57% were females, and about 46% were highly educated. Their mean age was 49.24 years (SD = 9.94). The three most typical business lines among the registered were professional, scientific, and technical; human health and social work; and wholesale and retail trade (see Table 5).

Based on an inspection of the confidence intervals, our sample was not very representative compared with a comparative dataset (Statistics Finland, 2018). Females were significantly overrepresented, and males were underrepresented. Furthermore, the age distribution differed significantly between our dataset and a comparative dataset. In our dataset, persons aged between 45 and 54 years were especially overrepresented, whereas younger and older individuals were underrepresented. Moreover, the participants were more often highly educated than those representing a comparative dataset. Concerning business lines, there were also significant differences. Those working in agriculture, forestry, and fishing were underrepresented, whereas those working in professional, scientific, and technical industries and human health and social work were overrepresented (Table 5).

Participants' demographic variation between different registration routes (RQ 5)

The participants (N = 1243), namely self-enrolled and those invited via email, differed from each other (see Table 6). The participants representing two different registration

Table 5 Participants' (N = 1243) representativeness compared with two reference datasets

	Participants		Reference data 1		Comparison		
	n	%	n	%	% difference	95% CIs	
Gender							
Female	706	56.8	1954	67	-10.2	[54.04	59.55] *
Male	537	43.2	962	33	10.2	[40.45	45.96] *
Total	1243	100.0	2916	100			
Age							
15–24 years	4	0.3	60	2	-1.7	[0.00	0.60] *
25–34 years	94	7.6	387	13	-5.4	[6.13	9.07] *
35–44 years	307	24.7	625	21	3.7	[22.30	27.10] *
45–54 years	432	34.8	803	27	7.8	[32.15	37.45] *
55–64 years	347	27.9	714	24	3.9	[25.41	30.39] *
65–74 years	55	4.4	327	11	-6.6	[3.26	5.54] *
75–80 years	4	0.3	0	0	0.3	[0.00	0.60] n.s.
Total	1243	100.0	2916	100			
Education ^a							
Basic education	99	8.0	429	15	-7.0	[6.46	9.47] *
Vocational education	570	45.9	1315	46	-0.1	[43.09	48.63] n.s.
Higher education	574	46.2	1172	41	5.2	[43.41	48.95] *
Total	1243	100.0	2916	100			
	Participants		Reference data 2		Comparison		
Business line							
Agriculture, forestry, and fishing	30	2.4	77,171	22.4	-20.0	[1.56	3.27] *
Mining and quarrying	1	0.1	868	0.3	-0.2	[-0.08	0.24] *
Manufacturing	102	8.2	16,777	4.9	3.3	[6.68	9.73] n.s.
Construction	87	7.0	37,985	11	-4.0	[5.58	8.42] *
Wholesale and retail trade	146	11.7	38,429	11.2	0.5	[9.96	13.54] n.s.
Transportation and storage	16	1.3	18,659	5.4	-4.1	[0.66	1.91] *
Accommodation and food services	42	3.4	11,048	3.2	0.2	[2.37	4.38] n.s.
Information and communication	45	3.6	9421	2.7	0.9	[2.58	4.66] n.s.
Finance and insurance activities	14	1.1	7611	2.2	-1.1	[0.54	1.71] *
Real estate activities	52	4.2	29,020	8.4	-4.2	[3.07	5.30] *
Professional, scientific, and technical activities	325	26.1	35,030	10.2	15.9	[23.70	28.59] *
Administrative and support services	49	3.9	12,660	3.7	0.2	[2.86	5.02] n.s.
Education	30	2.4	3727	1.1	1.3	[1.56	3.27] *
Human health and social work	172	13.8	17,439	5.1	8.7	[11.92	15.76] *
Arts, entertainment, and recreation	29	2.3	7349	2.1	0.2	[1.49	3.17] n.s.
Other service activities	90	7.2	19,312	5.6	1.6	[5.80	8.68] *
Unknown	13	1.0	37	0	1.0	[0.48	1.61] *
Total	1243	100.0	342,543	100.0			

Note. Reference data 1 = Yrittäjät Suomessa 2017 report (Statistics Finland, 2018).

Reference data 2 = Structural business and financial statement statistics from Statistics Finland (2019).

*denotes that the groups differ statistically significantly from each other based on 95% confidence intervals (CIs).

^aBasic education = basic and general upper secondary education, Vocational education = vocational upper secondary education and training, Higher education = universities and universities of applied sciences.



routes differed significantly in terms of gender distribution, $X^2(1, N = 1243) = 66.60$, $p < .001$. Females registered via self-enrolling more frequently than men, whereas males tended to register from the email invitation. Email-invited participants were significantly older ($M = 50.5$ years, $SD = 9.94$) than self-enrolled ($M = 47.5$ years, $SD = 9.69$), $t(1241) = -5.26$, $p < .001$. Also, a small difference between registration routes in terms of education was observed $X^2(5, N = 1243) = 11.18$, $p = .048$. In terms of business lines, there appeared to be differences between the self-enrolled and email-invited participants, $X^2(16, N = 1243) = 65.14$, $p < .001$. The findings indicate that among the self-enrolled ones, more participants represented the human health and social work sector and fewer participants represented professional, scientific, and technical work, compared with those in the email-invited group. This may stem from the fact that the self-enrolled participants were mostly women and that the sector was dominated by female entrepreneurs, while those invited via email were mostly males who worked in more technical industries (Table 6).

Discussion

The current study aimed to process evaluate the reach and recruitment in the intervention study ‘The Effects of Counselling Delivered Through Native Mobile Application on Work Ability and Work Recovery Among Micro-entrepreneurs’. This is important because of the need to enhance entrepreneurs’ work well-being, the lack of health promotion interventions among entrepreneurs, and the challenges associated with recruiting SMEs and the owners of these companies for interventions (e.g., Blonk et al. 2006; Martin et al. 2015; Williams et al. 2019). We assume that the findings can be used to increase the participation rates of intervention studies in general, as well as the participation rates of studies targeted at Nordic entrepreneurs specifically. Also, to support evidence-based recruitment in future studies, detailed information on how recruitment was performed in practice was provided.

A total of 1243 microentrepreneurs registered and answered the baseline study. Of these, 719 were reached by email invitation and 524 by a media campaign. The total cost of the recruitment campaign without working contributions was about 27,000 euros, which is about 22 euros per intervention study participant. Investing large sums of money in the recruitment of participants, however, is not a unique practice. As a reference, a web-based smoking intervention that targets smokers in the US used \$84,083.59 without personnel costs/work contributions (\$31.89 per participant) for the recruitment campaign (Watson et al. 2018). The campaign had similar elements as ours (e.g., Facebook marketing), and the costs were reported without work contributions. However, comparing costs is difficult because of the different types of interventions and target populations, as well as differences in calculation principles and lack of reporting.

The analysis of the effectiveness of certain marketing activities (RQ 1) based on the registration peaks in self-registration data showed that face-to-face contact in the events supported the media campaign. Our results indicate that close collaboration with entrepreneurs and entrepreneurial organizations is essential. Intensive and simultaneous marketing might be more effective than using only one approach. Furthermore, on the one hand, more traditional mass media campaigns might be effective when the key message is attractive to microentrepreneurs. On the other hand, radio advertisements—one of the

Table 6 Demographic variation of self-enrolled and email-invited participants (N = 1243)

Variable	Self-enrolled		Email invited		% difference
	n	%	n	%	
Gender					
Female	368	70.2	338	47.0	23.2
Male	156	29.8	381	53.0	-23.2
Age					
15–24 years	2	0.4	2	0.3	0.1
25–34 years	48	9.2	46	6.4	2.8
35–44 years	160	30.5	147	20.4	10.1
45–54 years	172	32.8	260	36.2	-3.3
55–64 years	129	24.6	218	30.3	-5.7
65–74 years	13	2.5	42	5.8	-3.4
75–80 years	0	0.0	4	0.6	-0.6
Education ^a					
Basic education	38	7.3	61	8.5	-1.2
Vocational education	256	48.9	314	43.7	5.2
Higher education	230	43.9	344	47.8	-3.9
Business line					
Agriculture, forestry, and fishing	3	0.6	27	3.8	-3.2
Mining and quarrying	0	0.0	1	0.1	-0.1
Manufacturing	51	9.7	51	7.1	2.6
Construction	27	5.2	60	8.3	-3.2
Wholesale and retail trade	59	11.3	87	12.1	-0.8
Transportation and storage	9	1.7	17	2.4	-0.6
Accommodation and food services	26	5.0	16	2.2	2.7
Information and communication	15	2.9	30	4.2	-1.3
Finance and insurance activities	4	0.8	10	1.4	-0.6
Real estate activities	19	3.6	23	3.2	0.4
Professional, scientific, and technical activities	119	22.7	206	28.7	-5.9
Administrative and support services	19	3.6	30	4.2	-0.5
Education	12	2.3	18	2.5	-0.2
Human health and social work	86	16.4	86	12.0	4.5
Arts, entertainment, and recreation	11	2.1	18	2.5	-0.4
Other service activities	51	9.7	39	5.4	4.3
Unknown	13	2.5	0	0.0	2.5
Total	524	100.0	719	100.0	

Note. ^aBasic education = basic and general upper secondary education, Vocational education = vocational upper secondary education and training, Higher education = universities and universities of applied sciences.



most expensive elements of the campaign (about 10,000 euros)—were not remarkably effective in motivating potential participants: only 1.5% of all the participants mentioned radio campaigns as their primary information source. This result is in line with findings by Martin et al. (2015). Together, these results suggest that at least in Finland and Australia, a radio campaign is not likely to be cost-effective in motivating entrepreneurs to participate.

Furthermore, only 1% of those invited via email registered. The finding, however, is in line with previous results (Caldwell et al. 2010), which may mean that the expressions used in the email invitations were, perhaps, not motivating or influential enough. In future studies, researchers could focus on the kinds of linguistic and visual techniques that would be the most effective for email invitations. One interesting option could be to integrate elements that engage potential participants already in a learning process (e.g., links to educational web material or electronic tests) to an email invitation (cf. Caldwell et al. 2010). Finally, based on the spontaneous feedback received, some potential participants were against the commercial registration system, which allows the collection of entrepreneurs' contact information. This may have influenced how the invitation was perceived.

Although the recruitment aim was reached, the number of participants was low, considering the massiveness of the recruitment campaign, which included more than 70,000 personal email invitations and active supportive marketing. This supports prior findings on SMEs that entrepreneurs are a challenging target group for engaging in interventions (Dawkins et al. 2018; Martin et al. 2015). One potentially hindering contextual factor might have been the fact that microentrepreneurs typically work long hours (e.g., Eurofound 2017), so they may lack time for participation. Also, scheduling conflicts might appear between investing time for the intervention, for family and for work and clients (cf. UyBico et al. 2007). Moreover, microentrepreneurs are a challenging group to reach compared with salary workers because many of them work alone. Reaching 300 salary workers for a study may require contacting only one organization. These typical features of the target group should be considered when planning intervention procedures and recruitment campaigns. In addition to the preceding possible reasons for the low participation rate, it is also possible that specific marketing actions, such as the nature of the email invitation or radio ads, affected the outcome. Because the marketing messages (e.g., email invitation) were kept concise to attract attention, a description of the contents was limited.

The analysis of the follow-up survey indicated that email was the most common source of information (RQ 2). It is somewhat surprising that the email invitation was also the most cited source among the self-enrolled participants because they were not invited by email. Additionally, the results point to the importance of collaboration with stakeholders, in this case the entrepreneur organizations, which were the second most frequently mentioned source of information. In a similar vein, Martin et al. (2015) found that research partner organizations were frequently cited by SME owners/managers as the lead source of information, as were professional organizations and professional organizations' emails/newsletters. In line with our findings, print materials and television/radio also received few mentions in their study. Even if the role of social media was small in the study by Martin et al. (2015), it was also the case in the present study, same for Facebook, which was frequently cited among the self-enrolled participants. However, Martin et al. (2015) found newspapers/newspaper websites, Internet searches,

project websites, and word of mouth as relatively more important sources than we did. A notable share of the participants reported that they did not remember where they had learned about the intervention. In future intervention studies, trying to find ways to facilitate participants' recollection of the information sources may be useful, for example, by asking about their sources as early as possible.

On the one hand, more than 1200 microentrepreneurs were motivated to take part in the intervention. Based on the qualitative interview data, the key participating motives (RQ 3) were perceived personal needs, for instance, to cope with demands, general interest in the topic and its application, and learning and finding new ideas for the business. On the other hand, there appeared to be many potential participants who did not have motivation, which is also important to discuss. We can assume that not all microentrepreneurs who were invited perceived a need to improve their recovery or work ability and, therefore, did not register. Therefore, a possible reason for the low participation rate could be that the intervention did not target a specific problem of those who declined the invitation (cf. Nielsen & Randal 2013). Interestingly, based on our results, microentrepreneurs working in agriculture, forestry, and fishing were underrepresented in our sample, though Finnish entrepreneurs working in those business lines are generally shown to report more problems with work ability than entrepreneurs working in other sectors (Statistics Finland 2018). One explanation for this might be that although these individuals have a need to improve something, they do not have the energy or motivation (cf. Nielsen & Randal 2013). In the future, exploring the registration motives of potential pilot testers could be useful while highlighting the possibility of specific need satisfaction. Furthermore, it might be useful (but particularly challenging) to study those who decided not to participate.

Our intervention was delivered through a smartphone application, which also seemed to relate to motives regarding participation. On the one hand, some participants were especially motivated and curious about the application, as stated before, but on the other hand, some potential participants without an Android smartphone could not participate, even if they were motivated to do so. Android was selected because at the time, Android was the most common smartphone platform in Finland when compared with iOS (or Windows Phone), and the project had limited resources; offering both Android and iOS versions was not feasible within the resources and time reserved for application development. We noticed that during the intervention period, 257 participants who had registered to the intervention and had answered the baseline study had not, based on the log data on using the application, installed the application. As an additional analysis, to understand the reasons for this decrease in motivation and associated nonadoption, a separate web survey was sent to these individuals. Based on the results, the key reason for not installing the app seemed to be the 'wrong' platform, mainly iOS instead of Android, which may indicate that some participants did not thoroughly understand the requirements for participation. This should be taken into consideration when planning future recruitment campaigns. Application development can be cumbersome, but with sufficient resources, it would be a good idea to provide versions for both (major) operating systems.

Among those who registered for the intervention and answered the first baseline survey, about 57% were females, and about 46% were highly educated. The mean age of participants was 49.24 years, and the three most typical business lines were professional, scientific, and technical; human health and social work; and wholesale and retail trade.



The participants were not representative (RQ 4) in terms of gender, education, age, and business line of Finnish entrepreneurs or Finnish microenterprises. One reason for the overrepresentativeness of females, as well as of the health and social work sector, may be related to the aim of the intervention: to enhance work well-being. In general, females are more interested in health-related topics than men (Sharp *et al.*, 2018). Another reason for the unrepresentativeness of the intervention sample compared with Finnish entrepreneurs may be related to recruitment strategies. Most of the recruitment strategies used, such as email invitations and social media posters, were passive by nature (*i.e.*, no direct person-to-person interaction). In a prior study regarding active and passive recruitment methods, passive methods were found to be more cost-effective, but they lead to gaining fewer participants and a less-representative sample compared with active methods (*i.e.*, direct interaction). Furthermore, the participants who were recruited with passive methods were more likely women and had higher income and education than those recruited with active methods (Estabrooks *et al.* 2017).

Finally, differences between the registration routes were observed (RQ 5): as an example, females registered more often through the self-enrollment route, whereas males seemed to register more often through the personal email invitation. Our study shows that recruitment strategies are associated with the type and representativeness of the participants.

The current study has several limitations. Although a social media campaign was an important part of the recruitment campaign, there were many media actions done at the same time, and separating their effects was difficult. The length of time between a participant's reception of an ad or invitation and their decision to register was unclear, making analyses somewhat unreliable. In the future, more sophisticated methods (*e.g.*, social media analytics) should be used. We compared our data with two different datasets for measuring representativeness. As mentioned, the first reference data were about Finnish entrepreneurs in general, and it was not possible to separate only microentrepreneurs from it and compare them directly. Hence, there is a lack of information about microentrepreneurs.

Taken together, our key learning is that many resources and efforts are needed when recruiting large amounts of microentrepreneurs to participate in interventions. Better participation rates and sample representativeness could be achieved with more persuasive and active face-to-face recruitment strategies, which, however, can often be more demanding and less cost-efficient. We utilized as many theory-based recruitment strategies as possible, which was quite challenging because of a lack of concrete examples of effective prior strategies. Further, being able to analyze the effectiveness of campaign, specific assisting technologies are needed. Therefore, we suggest that planning and implementing an effective recruitment process requires multiprofessional collaboration with scientist and professional communicators. In addition, the process evaluation should be planned carefully before the campaign. Previous results should be considered, such as those from a systematic review of recruitment strategies indicating that engaging participants in the learning process related to the health problem being studied is likely to enhance their participation (Caldwell *et al.*, 2010). We utilized previous findings, such as those suggesting that email invitations are not necessarily effective enough, so we implemented an additional media campaign. This was a good choice because only about 1% of those who were invited by email decided to participate. Unfortunately, at the time of the recruitment planning, we were not familiar with

those findings suggesting the inefficacy of the radio campaign, and we invested a lot in it. Most likely, the utilization of more active methods and gender-sensitive approaches could result in a sample that would be more balanced in terms of gender. Finally, it is critical to consider that recruitment strategies are associated with the characteristics of the participants.

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