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How can older peer leaders best support motivation for walking in physically inactive older adults? A self-determination theory perspective

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ABSTRACT

Objective: We aimed to determine what older adults perceive to be need-supportive behaviours of peer walk leaders, drawing primarily from Self-Determination Theory (SDT).

Design: Experienced peer leaders ($n = 13$; Mage = 73.23, $SD = 6.55$) and walkers ($n = 17$; Mage = 72.88, $SD = 5.79$) were recruited from existing walking groups. Individuals who expressed an interest in becoming a peer leader ($n = 18$; Mage = 72.72, $SD = 4.99$) or walker ($n = 20$; Mage = 78.90, $SD = 10.45$) were recruited from retirement villages.

Main Outcome Measures: We conducted semi-structured interviews to identify leader behaviours that support autonomy, competence, and relatedness and analysed the data using framework analysis.

Results: We identified eight main themes: eliciting walker interest, acknowledging and adapting to walkers' requirements, ensuring walkers feel comfortable, cared for, and socially integrated, supporting walker confidence, and promoting success experiences. Inexperienced leaders differed from other sub-groups in what they perceived to be supportive behaviours.

Conclusion: Future peer leaders could use the identified behaviours to help older adults feel motivated during group walks. New peer leaders can be educated about potential differences between what they describe as supportive and what walkers and experienced leaders perceive as need-supportive behaviours.

Walking is popular among older adults and is an effective and safe way to meet physical activity recommendations (Amireault et al., 2019). Older adults who walk regularly have better physical health and more social contact than their physically inactive peers (Bertera, 2003; Diehr & Hirsch, 2010; Ji et al., 2017). However, it is still

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unclear how older people can be best supported to increase and sustain their physical activity behaviour.

Older adults, who are insufficiently active, often lack the interest, social support, or confidence to be physically active (Gellert et al., 2015; Kosteli et al., 2016; Ory et al., 2016). Many older adults prefer doing physical activity in a group setting (Chong et al., 2014) or benefit from an exercise partner (Zubala et al., 2017). Group walks offer a safe environment for older adults to become physically active (Morris et al., 2019), socially integrated (Farrance et al., 2015), and can benefit confidence, walking motivation, and functional fitness (Kritz et al., 2020b). However, many older adults do not join or remain in such programs (Stiggelbout et al., 2006; Thøgersen-Ntoumani et al., 2019). Physical activity behaviour in older adults may be driven by motives that extend beyond health benefits, such as the desire to experience a sense of purpose and feeling connected to others (Morgan et al., 2019). However, it is unknown *how* peer leaders can support such motives to promote walking behaviour in older adults. For older volunteer walk leaders, feeling effective at motivating and supporting their peers is crucial for helping these leaders persist in their role (Kritz et al., 2020c). Therefore, it is important to understand how older volunteer leaders can effectively motivate and encourage their peers to participate and maintain involvement in group walks.

Self-Determination Theory (SDT; Ryan & Deci, 2017) provides a useful framework to understand adoption and sustained engagement in health-promoting activities such as group walks (Ntoumanis et al., 2020). According to SDT, human behaviour is determined by the extent to which an individual exhibits self-determined motivation towards the behaviour. Self-determined motivation is defined as engaging in a behaviour because it is fun, useful, or an integral part of one's identity. The theory proposes that self-determined motivation requires the satisfaction of three basic psychological needs for competence, relatedness, and autonomy (Deci & Ryan, 1987; Ryan & Deci, 2017). The need for competence refers to an individual's need to feel capable of achieving the desired outcome. In the context of a walking group, examples include feeling able to keep up with the group and confident in completing the full walk. The need for relatedness captures an individual's desire to experience a sense of belonging and connectedness with others (Ryan & Deci, 2017). In a walking group, this may involve the desire to feel part of the group and experience meaningful relations with other group members. The need for autonomy pertains to an individual's desire to experience a sense of choice and feel in control of their behaviour. For example, an individual may want to walk at their own pace and have the opportunity to stop or take a break when feeling tired. The satisfaction of the basic psychological needs has been linked to self-determined and higher levels of physical activity behaviour across the lifespan (Dacey et al., 2008; Ntoumanis et al., 2020).

SDT suggests that by engaging in a need-supportive communication style, individuals in positions of authority (e.g. teachers, exercise professionals) can foster the satisfaction of the three basic psychological needs in an individual, thereby promoting the individual's self-determined motivation (Ntoumanis et al., 2018; Teixeira et al., 2020). Autonomy can be supported by acknowledging the feelings and perspectives of group members, providing them with choice, and minimizing pressure (Reeve et al., 2004). Relatedness can be supported by providing group members with unconditional

positive regard, affection, and warmth (Ng et al., 2012; Ntoumanis et al., 2020). Competence can be supported by the provision of structure, clear guidance, realistic goals, and timely and informative feedback (Hancox et al., 2015). In contrast, a leader who tries to induce behavioural compliance by applying pressure or using extrinsic contingencies (e.g. rewards) is considered to be need-thwarting (Hancox et al., 2015).

In the physical activity domain, there is evidence suggesting that exercise instructors can be trained to be need-supportive and that this can be effective in promoting self-determined motivation and behavioural engagement (Ntoumanis et al., 2017; Perez-Gonzalez et al., 2019). Research suggests that volunteer peer leaders- individuals- who share similar age and circumstances and choose to take on a leadership role without formal qualifications- offer a low-cost alternative to professional instructors for delivering such programs (Ginis et al., 2013; Stathi et al., 2021). Two recent intervention studies have trained peer volunteers in need-supportive communication strategies to promote physical activity behaviour in older adults (Stathi et al., 2019; Thøgersen-Ntoumani et al., 2019). Peer-led walking programs provide an opportunity to use need-supportive social interaction to increase self-determined motivation, promote physical activity and encourage sustained behaviour change in older adults (Thøgersen-Ntoumani et al., 2019).

Intervention studies have relied on training volunteers in need-supportive strategies that were largely defined from research conducted with younger adults and professional instructors (e.g. Perez-Gonzalez et al., 2019). However, evidence suggests that older adults are likely to differ from younger adults in how they respond to interventions (French et al., 2014). Older adults may, therefore, have age-specific requirements not addressed by previously defined strategies. Only one study has specifically explored perceptions of an autonomy-supportive environment for older adults (Souesme & Ferrand, 2019). Souesme and Ferrand, (2019) found that health professionals working in a geriatric setting perceive trust-building, encouraging older adults to express themselves, and supporting their treatment progress as critical to an autonomy-supportive environment. However, these findings did not provide information on the perceptions of older adults and may not generalize to a peer-led physical activity setting.

In a recent review, researchers concluded that future studies could advance the delivery and effectiveness of peer-led interventions by identifying salient behaviours/strategies that peer leaders can use to promote behaviour change in the specific target population (Hulteen et al., 2019). SDT offers a useful framework for identifying such behaviours as it conceptualizes how different dimensions of support can affect motivation, physical activity, and health behaviour. Among the few studies that have applied the concept of autonomy support to an older population, none have explored what older walkers and peer leaders perceive to be autonomy-supportive strategies. One study described the use and efficacy of previously defined strategies to an older walking cohort (Thøgersen-Ntoumani et al., 2019). However, it did not explore additional age-specific strategies that can be provided by peer leaders (Thøgersen-Ntoumani et al., 2019).

The present study aimed to identify specific peer leader behaviours that can help older adults feel connected, autonomous, and confident when engaging in group walks. To achieve this, we examined perceptions of need-supportive peer leader behaviours, as reported by a heterogeneous sample of older adults (peer leaders and walkers with varying levels of group walking experience). Examining the views of

both leaders and walkers allowed us to obtain comprehensive insight and identify potential discrepancies between these groups in what is perceived as motivationally supportive peer leadership. Our findings can help understand how self-determination theory can be best put into practice in interventions using peer leaders to motivate older adults to adopt and sustain walking.

Methods

Research design

Semi-structured interviews were conducted to obtain an in-depth understanding of the behaviours perceived as important for supporting relatedness, competence, and autonomy in an older population. We used framework analysis to analyse the data, as it is comprehensive, flexible, and at the same time, allowed us to explore thematic categories that are shaped by the dimensions of the Self Determination Theory (Gale et al., 2013). Rather than being purely descriptive, the framework approach enables a conceptual explanation of the data (Furber, 2010). Another advantage of this method is that it allowed us to analyse a large, heterogeneous (i.e. leaders and walkers) sample and balance breadth with depth (Ritchie & Spencer, 1994).

Participants

Participants were derived from a mixed-methods study on perceptions of ideal older peer leader attributes (Kritz et al., 2020a). Further details are provided in the supplementary file. In brief, 101 participants (walkers, $n = 61$; peer leaders, $n = 40$) aged between 60 and 93 years were purposively recruited from mall walking groups and retirement villages in and around Perth, Western Australia. Participants had to be at least 60 years old and show interest or experience in group walking either as a walker or peer leader. Experienced peer leaders and walkers who had participated in a regular (at least once per week) group walk for a minimum of six months were recruited from mall walking groups in Perth. Inexperienced group walkers (i.e. retirement village residents who had not participated in a group walk within the last six month) and inexperienced peer walk leaders (i.e. residents who never led a walking group before), who had expressed interest in being part of a walking group, either as a group leader or as a walker were recruited as part of the Residents in Action trial (RiAT). RiAT was a quasi-experimental trial that explored the feasibility and efficacy of a physical activity intervention to promote walking behaviour in older adults living in retirement villages (Thøgersen-Ntoumani et al., 2019; Thøgersen-Ntoumani et al., 2017). Participants who agreed to be interviewed were included in the present study ($n = 68$).

Measures and procedure

The study received ethical approval from the Human Research Ethics Committee of an Australian university. All participants were informed about the nature of the study. Written informed consent was obtained before all interviews.

The first author conducted semi-structured interviews and made a note of initial reflections after each interview. Interviews lasted 19–28 minutes. Most interviews (60/68) were conducted on an individual, face-to-face basis. Eight participants, inexperienced

group walkers residing in retirement villages, preferred to be interviewed in groups. All interviews were audio-recorded using a voice recorder, transcribed verbatim by the first author, and stored using pseudonyms to ensure anonymity. Participants were then provided with a questionnaire measuring demographic characteristics.

The interview guide was informed by principles of SDT to identify which specific behaviours were perceived effective in supporting feelings of relatedness, competence, and autonomy (Ryan & Deci, 2017). Each need was first explained to the participants. For example, relatedness was explained as the 'the desire to feel part of the group and connect with other members of the group'. Initial questions asked participants to indicate the perceived importance of each respective need for determining a walker's motivation to join and remain in a walking group. Participants were then asked about the extent to which they thought a peer leader could support each need. Participants who perceived the role of the peer leader as relevant were then asked to list peer leader behaviours that they perceived important for supporting the relevant need. For example, for relatedness, participants were asked: 'Can you provide examples of things that a peer leader could say or do to help group members feel connected or part of the group?'. The complete interview schedule is provided in the supplementary section of the manuscript.

Analysis

Socio-demographic data were analysed using SPSS for Mac (Version 25) and presented as means and standard deviations (*M, SD*). The transcribed text was analysed using NVivo for Mac (version 11.4.2). Data were extracted and synthesized. We used an abductive analytical approach. SDT was used as a theoretical framework to match the need-supportive behaviours to the psychological needs proposed by SDT. However, the nature of the specific themes and sub-themes were inductively derived.

We followed the five stages of framework analysis as outlined in previous papers (Gale et al., 2013). During the familiarization stage, the first author reviewed a sub-sample (22/68 interviews) of the raw data in detail, read transcripts several times, and took notes of emerging patterns. In the second stage, notes were used to identify key issues, concepts, and themes and develop the pre-existing thematic framework (Ritchie & Spencer, 1994). Some codes were imposed upon the data based on the aims of the study (and the SDT framework), and some codes were generated based on themes emerging from the data itself. The resulting structure was then assessed, discussed, and agreed upon within the research team. Subsequently, the first author used NVivo to index the remaining data, identifying which sections of the data corresponded to identified themes. After this, the thematic framework was reviewed again, sub-themes were identified, and a hierarchy of themes was established (charting). This was achieved by rearranging summaries of the data according to the thematic framework. To increase the trustworthiness of the findings, identified themes were discussed with the research team and revised as necessary. In the final stage, 'mapping and interpretation', key characteristics as laid out in the chart were analysed, and a schematic diagram of identified need-supportive behaviours was created (a simplified version is presented as Figure S1 in the supplementary section). This process has been recommended to help guide the interpretation of the data (Srivastava & Thomson, 2009). To maintain analytical transparency, and ensure rigor, the first author, recorded all methodological decisions and their reasons and reflected on potential

biases during the interpretation process (Barry et al., 1999). The framework approach allowed us to compare perceptions across different participant groups. The findings from the group interviews were compared with the findings of the individual interviews, and no differences were observed. It has previously been argued that the combination of group interviews and individual interviews can enhance data richness, and enhances trustworthiness of the findings (e.g. Lambert & Loiselle, 2008). We, therefore, decided to include both sets of data.

Results

Participant characteristics

Thirty-one volunteer peer leaders and 37 walkers were interviewed and included in the overall analysis. Socio-demographic characteristics of the overall sample and across the four different sub-groups are presented in Table 1. Participants were predominantly white, Australian-born, female, retirees in their 70 s (36/68), and almost a quarter (15/68) were aged 80 and above.

Need-supportive behaviours

We identified eight themes and eighteen sub-themes of need-supportive peer leader behaviours. The organization of themes and sub-themes is illustrated in Figure 1.

A description and an illustrative quote for each theme is provided in Table 2. Illustrative quotes for each sub-theme are provided in the supplementary section (Tables S1–S3). Further details on the number and percentage of participants mentioning each theme and sub-theme are provided in the supplementary section, Table S4.

Autonomy supportive behaviours
The majority (62/68) of participants said it was important for a peer leader to support autonomy among their group members. Participants suggested that volunteer peer leaders could offer opportunities perceived as meaningful and stimulating (attracting interest from walkers), enquire about individual requirements and preferences (acknowledging preferences and perspectives of walkers), and provide group members with choice and a structure that allows self-initiative (adapting to walker's requirements).

Autonomy theme 1: Attracting interest from walkers

About a quarter (19/68) of participants mentioned behaviours that attracted an interest from walkers.

Combines walking with fun and positive stimulation
Twelve participants described it as important for the peer leader to combine the walk with experiences or an environment considered as enjoyable or stimulating. Some participants stated that they perceived walking on its own as 'boring' or
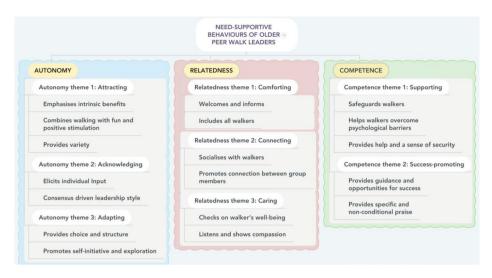
Figure 1. Schematic diagram illustrating themes and sub-themes.

Table 1. Participant characteristics by sub-group.

Characteristics		All (N = 68)	Inexperienced group walker (N = 20)	Experienced group walker (N = 17)	Inexperienced peer leader (N = 18)	Experienced peer leader (N = 13)
*M*Age (*SD*, range) in years		74.68 (7.78, 60–93)	78.90 (10.44, 60–93)	72.88 (5.79, 64–85)	72.72 (4.99, 63–80)	73.23 (6.55, 65–88)
Gender (Female, %)		84	90	78	94	69
Ethnicity (White, %)		93	100	71	100	100
Australian born (%)		46	45	53	44	54
Living alone (%)		68	80	59	72	54
Marital Status (%)	Married	32	20	41	28	46
	Widowed	34	45	29	22	39
	Separated/ Divorced	25	30	6	44	15
	Never married	9	5	24	6	0
Highest level of education (%)	Secondary education	52	70	41	44	46
	Vocational training	22	5	29	17	46
	College or university	26	25	30	39	8
Employment (%)	Employed	10	20	0	6	15
	Retired	90	80	100	94	85
Health (%)	Using an assistive device	19	40	12	11	8
	Current health issue	38	40	47	33	31
	Had a major life event in the last 6 months	41	45	59	22	39

Note. M = mean, SD = standard deviation.
There was no statistical difference in demographics of leaders vs. walkers, and inexperienced vs. experienced peer leaders. Experienced walkers were more likely to be married ($p > 0.01$) than inexperienced walkers but did not differ on any other demographic variables.

Table 2. Themes, sub-themes and illustrative quotes.

Themes and description	Subthemes	Illustrative quote
Autonomy theme 1: Attracting interest from walkers Provides walkers with a meaningful reason to walk as part of a group. Combines walking with fun, variety and positive stimulation	Combines walking with fun and positive stimulation Emphasizes intrinsic benefits Provides Variety	To want to come again, they have to feel good after they have done their walk. Say 'This was a good…what a great half an hour have we done'. And laugh. It needs to be fun, not just all hard work. (IGW)
Autonomy theme 2: Acknowledging requirements and perspectives of walkers Recognizing the needs, preferences and requirements of every group member	Elicits individual input Consensus driven leadership style	You need to get them to voice what they want. 'Out of this group where is it that you want to go? How long do you want to go? (IPL)'
Autonomy theme 3: Adapting to walkers' preferences and requirements Accommodates walker's needs	Provides choice and structure Supports self-initiative and exploration	Let them know, that you are prepared to do it at their pace or their choice. To me that's important. A lot of older people that aren't as fit are losing choices. (IGW)
Relatedness theme 1: Comforting Shows warmth and ensures walkers feel comfortable and accepted	Welcomes and informs walkers Includes all walkers	Keep saying 'You are welcome. You are welcome to join any time you want'. You are not excluded if you don't come to one class. (IGW)
Relatedness theme 2: Connecting Helps walkers experience meaningful connection	Socializes with walkers Promotes connection between group members	If we see somebody alone, we say 'ok, talk to her, talk to her'. We match-make. Because it's nice to talk to somebody. (EPL)
Relatedness theme 3: Caring Ensures walkers feel understood and cared for	Checks on walker's wellbeing Listens and shows compassion	If I get breathless, I just stop, or I sit down. Sometimes I didn't feel good or my knee hurt, or my foot hurt or my back hurt. And then I can just sit down. And then I like when people come and say, 'Are you ok?'. (EGW)
Competence theme 1: Supporting walker confidence Ensures that walkers remain safe and feel secure	Safeguards walkers	You need to explain to them 'Watch where you are walking'. Constantly saying 'Watch where you place your feet, so you don't fall'. (IPL)
	Helps walkers overcome psychological barriers Provides help and a sense of security	If someone was very fearful, I tend to walk near them. So sometimes if you are with a more confident person, it gives you confidence. (EPL)
Competence theme 2: Success promoting. Helps walkers feel effective and successful	Provides guidance and opportunities for success Provides specific and non-conditional praise	Walking with them and saying, 'Oh you did well this week'. And say, 'Today you are doing a lot better than you did last week'. I think just mainly praise and making them positive at their pace. (EPL)

Note. IGW = Inexperienced group walker, IPL = Inexperienced peer walk leader, EPL = Experienced peer walk leader, EGW = Experienced group walker.

'painful', which de-motivated them from taking part in a walk that was only about walking (e.g. '*Once you are our age, you choose to do things you enjoy*'. Experienced group walker, male, 75 years old). Several inexperienced group walkers expressed

interest in a walk that was not 'only about walking', but that also integrated other aspects. This included doing activities that walkers perceive as enjoyable but cannot do on their own due to a lack of confidence, motivation or resources.

Participants differed in what they considered as fun or stimulating. Some people considered social stimulation as fun. Others preferred not to talk while walking and emphasized the importance of being offered a stimulating environment and encouraged to walk mindfully (e.g. '*They (peer leader) can say 'look at the beautiful birds'* Inexperienced peer leader, female, 79 years old). Participants also highlighted the importance of experiencing intellectual stimulation (e.g. opportunity to use existing skills such as good orientation) and receiving other forms of entertainment (e.g. making jokes). A peer leader who established what walkers enjoy and then integrated relevant aspects into the walk, was perceived as ideal for supporting walker autonomy.

Emphasizes intrinsic benefits

Nine participants described behaviours that pertained to the peer leader providing them with a meaningful rationale for walking as part of a group. This included emphasizing the benefits of walking (e.g. mental and physical health benefits) and the advantages of walking as part of a group (e.g. social interaction, safety). Several inexperienced group walkers expressed concerns about whether they would enjoy a group walk (e.g. due to variations in pace among older people, fear of competition). A peer leader who promoted the walk as an interesting activity by highlighting the enjoyable aspects (rather than the walking per se) was perceived to support people's willingness to *want to* partake.

Provides variety

Five participants suggested that a peer leader could attract interest by providing opportunities for new experiences. Suggestions included varying walk routes, adding themes (e.g. walking in a specific setting or to a designated destination) to walks, and providing opportunities to learn about new places. For example, a peer leader who explained the history of new places or taught walkers about different bird species could trigger interest.

Autonomy theme 2: Acknowledging requirements and perspectives of walkers

Many (31/68) participants described a leader who acknowledged the requirements and perspectives of group members.

Elicits individual input

Twenty participants emphasized the importance of the peer leader asking individual group members to provide input as some may be embarrassed to express their perspective in the group setting. Other important behaviours included asking participants to notify the peer leaders about any medical conditions that leaders need to be aware of, as well as specifying individual requirements, for example, if they can only walk on flat surfaces due to using a walking aid or if they suffer from high blood pressure.

An experienced walk leader explained that older people are often embarrassed or forget to express their medical requirements. A peer leader who acknowledged requirements was perceived as helping walkers feel in control of the situation.

Consensus driven leadership style

Twenty participants described behaviours that related to ideal peer leaders following a consensus driven leadership style. This included the leader asking the group to state preferences, providing walkers with an opportunity to make suggestions and contribute to group decisions. Four participants suggested that taking things 'to a vote' would work best for them when making group decisions. One volunteer explained that it is important for a leader to have a plan but: '*If I hear from the group that they are feeling that my plan is absolutely right-shit, then throw that out the door, take up something else. Have a basic plan and have flexibility*'. (Inexperienced peer leader female, 73 years old)

Autonomy theme 3: Adapting to walker's preferences and requirements

Preserving walker independence was perceived as important. Most participants (51/68) mentioned a leader who adapted to the preferences and requirements of group members.

Provides choice and structure

Of particular importance was the peer leader providing walkers with choice as opposed to controlling their walking behaviour:

> You cannot have regimentation. They are all at different stages so some of them can't walk so fast. Have a disability or something. and most of these people have a very high level of education. Some are doctors, retired doctors. You don't tell people what they must do. *(*Experienced peer leader, female, 75 years old)

This also included flexibility in attendance as often participants cannot commit to a full program due to conflicting appointments (e.g. medical appointments, caring for grandchildren). Several participants mentioned that older adults often find it hard to adapt to a group setting as they are limited by an underlying health issue, as explained by a participant who expressed interest in volunteering as a peer leader:

> One of the worst things older people face is loss of autonomy. If I choose to walk in the rain, I can do it, if I want to. but if you have some sort of health issue then you can't do it (Inexperienced peer leader, female, 72 years old).

Within a group setting, participants often emphasized the importance of choice:

> Let them know that you are prepared to do it at their pace or their choice. To me that's important. A lot of older people that aren't as fit are losing choices. (Inexperienced group walker, female, 85 years old)

However, several inexperienced peer leaders mentioned that they anticipate challenges if too much choice is provided in a diverse group, as explained by a retirement village resident:

Everybody has got different levels. So, I think if you have got Mr. Brown saying, 'Well I don't want to walk up that way, and I want to go down that way' That can create problems. Well, I'd say 'How about we go this way or' …we got two choices. We go this way of we go that way. No more than two choices because you get too many voices and you lose too much time. (Inexperienced peer leader, female, 79 years old)

Supports self-initiative and exploration

Thirty-three participants described a peer leader who encouraged walkers to be aware of their body and walk within their limitations (e.g. at their own pace and stopping if needed). Several walkers mentioned that being old meant that they needed to be prepared for the 'unexpected' and having the choice to stop anytime and listen to their body was important. Several inexperienced leaders emphasized that promoting self-initiative in a group with differing capabilities could be challenging as a peer leader (e.g. '*I think the issue is that whoever is walking further ahead doesn't sort of disappear out of view. It's important not to leave anybody behind who may just turn back or may not even wish to come the next time*' inexperienced peer leader, female, 63 years old).

An experienced group walker (Female, 68 years old) mentioned how walking in a circle as part of a mall walking group works for her and stated *that 'If we (as individual walkers) can do a lap and a half, we do a lap and a half. But if we can only do one, we do one'.* Further suggestions to deal with different capabilities included the peer leader leading from behind and letting walkers determine the pace, to having more than one leader to cater for the faster and slower walkers or splitting up the group into smaller groups (of different paces) with a common end point.

Autonomy supportive behaviours. – Comparison across sub-groups

Walkers. Most walkers (31/37) felt it was important for a peer leader to support the autonomy of walkers. Salient themes related to the peer leader adapting to walker limitations and providing options for different levels. Inexperienced walkers (13/20) primarily described a peer leader who provided them with different options (e.g. long walk vs. short walk). The majority (13/17) of experienced walkers additionally recognized the importance of a leader who encouraged them to walk at their own pace. Behaviours pertaining to a consensus driven leadership style (i.e. taking decisions to a vote) were less prominent among walkers. Behaviours relating to a peer leader that attracted the interest (e.g. made a walk fun) of walkers were primarily mentioned by inexperienced group walkers.

Leaders. Most leaders (30/31) said it was important for a peer leader to provide autonomy support. Most (16/18) inexperienced peer leaders mentioned behaviours that referred to a consensus driven leadership style. In contrast, experienced leaders (13/13) primarily emphasized that walkers should be encouraged to walk at their own pace. Promoting self-initiative was less prominent (4/18) among inexperienced leaders with some mentioning the challenge of managing a group with diverse capabilities. However, most (12/18) inexperienced leaders suggested providing walkers with options.

Relatedness promoting behaviours

The majority (56/68) of participants, in particular group leaders, said that the peer leader could improve a sense of belonging in walkers by engaging in supportive behaviours. The importance of socialization is illustrated by a walk leader in the following quote:

> A lot of people do prefer to go for a walk and walk on their own, but I think most people like to walk with someone and talk and have a conversation. So, I think in a group it's good. (Inexperienced peer leader, female, 75 years old)

Three themes of relatedness-supportive behaviours, labelled as comforting, connecting, and caring, were identified (see Table 2).

Relatedness theme 1: Comforting
More than half (38/68) of the interviewed participants perceived peer leader behaviours pertaining to *comfort* as important to experience a sense of belonging/relatedness.

Welcomes and informs walkers. Twenty-five participants described behaviours that involved the peer leader ensuring that walkers felt welcome and informed about all aspects of the walk (e.g. '*give them a run down on the what's going to happen, so they don't come in cold*' Experienced peer leader, male, 75 years old). Suggestions included smiling at participants and encouraging them to join.

Includes all walkers. Nineteen participants described a peer leader that proactively made walkers feel part of the group, included, and accepted. Suggestions pertained to ensuring that everyone is attended to and peer leaders devoting special attention to vulnerable group members (e.g. who are slower or less confident).

In contrast, a negative behaviour included asking too many personal questions or embarrassing walkers (e.g. '*If you make comments about their look or their weight or something. If they are too heavy or too slim or whatever. We don't come here to judge anybody*'. Experienced peer leader, female, 66 years old)

Relatedness theme 2: Connecting with walkers
A positive social atmosphere where people talked to each other and were sociable was considered important by the majority. Most (41/68) of the participants mentioned behaviours that related to the peer leader proactively connecting with walkers and helping them connect with each other to promote a sense of belonging and group cohesion. A volunteer peer leader describes the importance of experiencing meaningful connection when walking as part of a group:

> It's silly to be in a group where you are on your own you know. You have to mix and match and find a compatible person to walk with or sit and rest with if you need to rest… or just get along with. (Inexperienced peer leader, female, 70 years old)

Socializes with walkers. Twenty-two participants described a leader who socialized with walkers by showing interest in them and proactively initiating conversation

during and after the walk. Social encouragement, for example encouraging walkers to return for a future walk (e.g. '*Say to them "I look forward to seeing you next week"*'. Experienced peer leader, female, 75 years old*)* or reminding them of the walk, was frequently mentioned to induce a sense of belonging and social purpose. A few participants added it was particular important for the peer leader to talk loud and clear to be understood by walkers with hearing problems.

Promotes connection between group members. Twenty-eight participants described a peer leader who supported socialization among group members. For example, introducing people to each other, creating opportunities for socialization (e.g. going for a coffee with group members after the walks) and providing help to those struggling to feel connected (e.g. '*They can try and start a conversation between different people in the group by telling them things maybe, one about the other like "Did you know that so and so..". You know things they think they might have in common*'. Inexperienced group walker, female, 60 years old). However, some walkers preferred to walk by themselves or disliked talking while they walked but enjoyed socializing after the walks.

A new volunteer suggested that a group leader could promote communication between group members by taking breaks during the walk and explained that: '*It's nice to stop and have a chat. So, you are communicating, not just walking*'. (Inexperienced peer leader, female, 79 years old). Several participants mentioned the importance of the peer leader organizing a social event after each walk (e.g. going for coffee after the walk). Additional suggestions included a peer leader who assigned tasks to individual members of the group to support group cohesion despite different walking speeds within the group (e.g. '*If you have got someone or a couple of people who are really slow. Maybe ones who are more active could sort of just stay alongside them and make sure they are ok*'. Inexperienced peer leader, female, 75 years old).

Relatedness theme 3: Caring
Almost a third (21/68) of participants described behaviours that illustrated the peer leader expressing genuine care during the walks.

Checks on walkers' wellbeing. Fifteen participants suggested routinely checking on group members and ensuring that no one feels left behind. This included checking on their well-being (e.g. '*I like when people come and say, "Are you ok?"*' Experienced group walker, female, 79 years old)

Listens and shows compassion. Ten participants emphasized the importance of a peer leader ensuring that walkers felt cared for by showing compassion, and listening to walkers, and proactively approaching walkers. Behaviours relating to care were most frequently mentioned by walkers who reported living alone.

Relatedness-supportive behaviours – Comparison across sub-groups
Leaders. All leaders perceived relatedness-supportive peer leader behaviours as

important. Frequently mentioned behaviours pertained to the peer leader being inclusive and welcoming (mentioned by 23/31) and promoting socialization among group members (mentioned by 22/31). Eleven leaders described caring behaviours, of which most related to the leader ensuring that walkers felt good during the walk. Experienced peer leaders primarily described a leader who promoted connection between group members and made walkers feel welcome, cared for, and included. Inexperienced leaders primarily mentioned a leader who socializes with walkers.

Walkers. About two thirds of the interviewed walkers (25/37) perceived it important for the leader to engage in relatedness supportive behaviours. Similar to leaders, many walkers mentioned behaviours relating to comfort (15/37) and connection (19/37). Among walkers who mentioned connecting behaviours most (15/19) described a peer leader who provided group members with an opportunity to socialize after the walk. Caring behaviours were mentioned by ten walkers of whom most ($n=8$) were experienced group walkers.

Competence promoting behaviours

The majority (48/68) of participants, described how a peer leader could support walkers in feeling mentally and physically more competent at walking. Table 2 illustrates themes and sub-themes that were identified as competence supportive.

Competence theme 1: Supporting walker confidence

Several participants mentioned confidence-related barriers to participating in a group walk, such as the fear of falling, being worried about not being able to keep up and being left behind, and dependence on walking aids. The majority of participants (42/68) mentioned behaviours relating to the theme 'supporting walker confidence'. Sub-themes describe how a peer leader can help walkers have a safe walking experience, overcome confidence-related barriers, and feel secure at walking in a group setting.

Safeguards walkers. Twenty-nine participants suggested that a peer leader would need to ensure that walkers remained safe during the walk. For example, a volunteer explaining the importance of safety precautions to prevent falls, stated that: '*Falls are the last thing aged people need. They are too dangerous. Many people don't recover from falls when they are old*' (Inexperienced peer leader, female, 79 years old). Suggestions included a peer leader that ensured walkers are prepared for the walk, use appropriate aids (e.g. informing walkers of safety precautions, and ensuring they take their medication and stay hydrated). Further suggestions described a peer leader who made walkers aware of hazards, and who ensured that the walk takes place in a safe environment and suited the walking requirements of group members. For example, if walkers used walking frames, flatter surfaces needed to be chosen. It also included the peer leader ensuring that walks take place in good weather, during suitable hours, and in a safe area

(e.g. *'Safe from attacks from the people outside and from magpies'.* Inexperienced peer leader, female, 77 years old).

Helps walkers overcome psychological barriers. Twenty-three participants mentioned that the peer leader could help walkers overcome psychological barriers (e.g. fear of falling). Suggestions included using positive encouragement and distraction. For example, a participant recommended that a peer leader could use positive encouragement by saying '*do what you can and, if you can't or are tired just sit down'.* (Experienced group walker, female, 71 years old). It was also suggested that the peer leader could proactively distract walkers from negative thoughts and anxieties (e.g. boredom, fear of experiencing pain) by for example using social interaction and humour (See Supplementary Section, Table S2 for an illustrative quote).

Provides help and a sense of security. Eleven participants emphasized that a peer leader could promote walking confidence by being observant and proactively supportive. An experienced group walker explained how an observant peer leader can convey confidence:

> There is always a risk. You fall over or something like that. And of course, they (peer leaders) keep their eye on you while we are here, that makes me feel more confident and more secure. (Experienced group walker, female, 70 years old)

Being supportive primarily entailed the peer leader being helpful when they notice a walker is struggling, and ensuring they stick to their limitations. Walking close to fearful walkers was another common strategy mentioned.

Several walkers emphasized that any form of pressure can reduce perceptions of confidence, as it can be dangerous (e.g. lead to falls) and de-motivating (e.g. being discouraged because of over-exhaustion). For example, one resident who expressed interest in joining a walking group emphasized that '*It has to be established from the start- it's a not a competition. If you complete the walk you are as good as the person who has done it in 20 minutes earlier than me'* Inexperienced group walker, female, 71 years old.

Competence theme 2. – Success promoting

Just over a third (36/68) of the interviewed participants explained that competence could be supported by a peer leader who helped walkers have a successful experience.

Provides guidance and opportunities for success. Twenty-four participants described a leader who provided guidance and opportunities for experiencing success. Helping walkers set realistic goals/length of walks, included setting a slow pace, and discouraging scenarios that were perceived as being over exhausting and overwhelming (e.g. walking beyond limitations, not taking breaks). It also involved providing guidance and direction (e.g. '*If you are struggling, the leader might suggest doing something differently. Slow down a bit'.* Experienced group walker, female, 71 years old).

Provides specific and non-conditional praise. Seven participants mentioned a leader who provided participants with specific and non-conditional praise. Congratulating

walkers for achieving mini goals, including attending the walk, was encouraged. On the other hand, providing praise for speed or walking performance was discouraged (e.g. '*You are not setting out who comes first. Too bad if a person comes first. You don't reward them for coming first*'. Inexperienced group walker, female, 71 years old.)

Competence-supportive behaviours – Comparison across subgroups
Leaders. Most leaders (27/31) perceived it important to engage in competence-promoting behaviours. Themes relating to promoting success experiences in walkers (in particular positive encouragement) were mentioned by several leaders (19/31). Themes relating to providing a sense of security 3/31) and safeguarding walkers (13/31) were less salient among leaders. Inexperienced peer leaders primarily mentioned success-promoting behaviours (13/18) and placed less emphasis on supporting walker confidence (8/18). About half (7/13) of experienced peer leaders mentioned confidence and success promoting behaviours.

Walkers. More than half of the walkers (21/37) described competence promoting behaviours and mentioned behaviours supporting walker confidence. Walkers frequently described a leader who prioritized preparedness, walker safety, discouraged competition, and who provided positive encouragement throughout the walk. Themes relating to success-promoting behaviours (7/37) were less salient in this group. Competence promoting behaviours were frequently described by inexperienced walkers (14/20), but were less prevalent among experienced walkers (mentioned by only 7/17).

Discussion

Our study explored peer leader behaviours that support the psychological needs that foster self-determined motivation in older adults who walk as part of a group. We identified eight sets of behaviours, which a peer leader could utilize to support autonomy, competence, and relatedness in older walkers. Please see Table S5 in the supplementary file for a detailed overview of all behaviours. We further advance past research by considering the divergence in the perspectives of potential providers and receivers of need-support in terms of what need-support should entail. Overall, our findings extend research by Hancox and colleagues (2015), who provided suggestions on how fitness instructors can support or thwart individuals' basic psychological needs. In the context of an older walking group, we add the importance of a leader who ensures walkers feel welcome, safeguards walkers, helps walkers overcome psychological barriers, acknowledges medical requirements, discourages competition, and encourages walkers to stick to their physical limitations to promote perceptions of relatedness, competence, and autonomy. A walk leader who uses pressure (e.g. tells walkers that they *must* walk a at a specific pace), who embarrasses walkers (e.g. commenting on their appearance), or who is dismissive of a group members preference was regarded as thwarting their psychological needs and consequently undermining their motivation to participate (Hancox et al., 2015; Edmunds et al., 2008).

Autonomy-enhancing behaviours such as the leader acknowledging perspectives, providing walkers with options, and highlighting intrinsic goals, align with previous

SDT research (Edmunds et al., 2008; Hancox et al., 2015). Suggestions on providing older adults with an opportunity for feedback align with research in geriatric settings emphasizing that autonomy support includes recognizing and respecting older adults as an individual (Souesme & Ferrand, 2019). Our findings align with research emphasizing the importance of fun and intrinsic motivation for motivating older adults to participate in physical activity interventions (Dacey et al., 2008; Devereux-Fitzgerald et al., 2016). We extend past research by providing guidance on *how* a peer leader could make a walk fun for older adults (Perkins et al., 2008) by, for example, integrating variety and adding stimulating components. We also add the significance of acknowledging and adapting to the medical requirements of walkers.

Our findings confirm the importance of a leader who promotes relatedness by listening to participants, showing care, and using inclusive language (Hancox et al., 2015). We further emphasize the importance of a peer leader who makes participants feel *welcome,* which aligns with research emphasizing the relevance of trust and a positive 'first contact' in new settings among the older population (Brooks et al., 2017; Souesme & Ferrand, 2019). Socialization behaviours were primarily described by leaders, which is consistent with previous findings (Chong et al., 2014; Kritz et al., 2020a). However, all sub-groups described a peer leader who provides opportunities for walkers to connect with each other.

Perkins et al. found that low self-efficacy often prevents older adults from engaging in physical activity and group activities. For a younger population, confidence-related barriers such as fear of falling or experiencing pain are unlikely to be relevant. Our findings highlight the importance of a peer leader who helps older adults overcome such barriers and distracts them from negative thoughts for supporting competence. Findings by Chong et al. (2014) further suggest that vulnerable cohorts, such as older adults who are cognitively impaired, prefer walking in a safe environment and with a walking partner. Our findings add to this by highlighting the significance of safeguarding behaviours among inexperienced walkers (Perkins et al., 2008). Older adults who feel physically vulnerable may rely on a safe environment, including a peer leader who helps them feel secure (Perkins et al., 2008).

The relevance of the peer leader for providing active guidance and to promote positive success experiences, aligns with previous SDT research on need-supportive behaviours in geriatric settings (Souesme & Ferrand, 2019). Our findings emphasize the need for a leader who discourages competition and encourages walkers to stick to their physical limitations to promote perceptions of competence. The importance of encouraging adults to set realistic, flexible goals but focus on their own success is consistent with research showing that older adults benefit from goal-setting and self-monitoring (Rosenberg et al., 2015) but not evaluation (Nathan et al., 2014).

We found some discrepancies in what walkers and leaders with different levels of group walking experience, perceived to be motivationally supportive behaviours. (Further details are provided in Table S4). Experienced leaders often shared the views of walkers. For example, the provision of safety, choice and support were mentioned by both group walkers and experienced leaders, however, success-promoting behaviours were mainly described by inexperienced leaders. Most inexperienced leaders also suggested a consensus-driven leadership style (i.e. the majority determines group decisions). In contrast, experienced leaders emphasized the importance of adapting

to individual requirements and encouraging self-initiative. The importance of adapting to individual walkers is supported by a recent longitudinal-mixed methods study which found that older walk leaders who succeed and persist in their volunteering role prioritize helping behaviours and adapt to the most vulnerable walkers (Kritz et al., 2020c).

Strength and weaknesses

We conducted a review of the literature and could not find any prior study that identified behaviours perceived as need-supportive by an older population in a physical activity setting. The main strength of the present study is that it adds to the SDT literature on need-supportive strategies by facilitating understanding of how psychological needs can be supported in an older population. We were able to obtain a diverse understanding of effective leadership behaviours by ensuring that the sample represented volunteer peer leaders and walkers who varied in leadership and group walking experience. Another strength is that our findings provide some building blocks to train older volunteer peer leaders to be more need-supportive in future physical activity interventions. Our study focused on self-determination theory and, hence, it only provides insights from one theoretical perspective. Other conceptual inputs, such as the framework proposed by Morgan et al. (2019), could be used to identify how peer leaders can support additional motives, such as experiencing a sense of purpose. Another limitation may be that while interviews were numerous, they were relatively short. Future qualitative research can provide more in-depth exploration.

The identified behaviours can be used in the context of an SDT-based physical activity intervention to train older peer walk leaders to be motivationally supportive. However, our findings may not be generalizable beyond older, white females and those who are interested in group walking, providing a further avenue for future research. Furthermore, our findings are limited by proposing strategies that have not yet been tested for their effectiveness in such settings.

Implications for practice and future research

We describe specific peer leader behaviours that can support older adults to adopt and maintain group walking. Our findings provide an understanding of need-supportive behaviours and emphasize the importance of a walk leader who provides autonomy, relatedness, and competence support. It would be useful to train older volunteer leaders in the behaviours identified in this study and then examine the effects on need satisfaction, self-determined motivation, and behaviour maintenance in older adults.

The differences between inexperienced leaders and walkers suggest that future peer leaders may need to be made aware of and taught skills to address this potential tension. New peer leaders could be taught behaviours perceived to be supportive by walkers and experienced leaders to help them succeed and persist in their role (Kritz et al., 2020a, 2020c). For example, they should prioritize helping walkers feel safe, refrain from pressurizing language, promote self-initiative, focus on being welcoming

and provide socialization opportunities after the walk. Leaders could also learn to deal with potential differences in relatedness, autonomy, and competence-supportive leader behaviours expected by walkers.

Future research can quantitatively evaluate the extent to which the described strategies can be taught to older peer leaders and are effective at promoting need satisfaction and self-determined motivation in the context of a peer-led walking intervention.

Data availability

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

Disclosure statement

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