

# Buddy-motivational interviewing (buddy-MI) to Increase Physical Activity in Community Settings

## Results of a Pragmatic Randomised Controlled Trial

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### Abstract

This article describes the implementation and evaluation of a novel buddy-Motivational Interviewing intervention intended to help apparently healthy but relatively sedentary adults to adopt and maintain regular physical activity for health and fitness. This intervention is an adaptation of Motivational Interviewing which adds client-selected motivational-buddies who can provide in-session input as well as ongoing out-of-session support focused on strengthening client's motivation for and movement toward their physical activity goals. A pragmatic parallel-group randomised controlled trial with 12-month follow-up was implemented to test the intervention. The trial demonstrated that buddy-MI was feasible and could be delivered with equivalent fidelity to standard MI and both groups demonstrated statistically significant changes across a range of behavioural and health-status outcomes. Moreover, the experimental group participants generally 'outperformed' the control group participants as shown by the consistent trends observed over three repeated measures out to 12-months (although these between-group differences were statistically non-significant). Qualitative data indicated participant acceptance of the programme as well as providing initial evidence of positive collateral health effects ('ripple effects' whereby buddies changed their behaviours also). Consideration for further development, evaluation and applications are also discussed.

### Keywords

*motivational interviewing, social support, buddy, physical activity*

Most people in Western societies are exposed to increasingly obesogenic environments and the adverse effects, the so called lifestyle diseases, are now prevalent (Swinburn, Egger, & Raza, 1999). However, engaging in regular, moderately vigorous physical activity can go some way towards offsetting these adverse effects (Bouchard & Shephard, 1994). The so called 'independent protective effect' of moderately vigorous or vigorous exercise was first demonstrated via a series of ground-breaking prospective cohort studies (Morris, Heady, Raffle, Roberts, & Parks, 1953; Morris, Kagan, Pattison, & Gardner, 1966; Paffenbarger & Hale, 1975; Paffenbarger, Wing, & Hyde, 1978). Moderately vigorous physical activity has now been positively linked via a cause-and-effect relationship with a range of improved health outcomes (Lee & Skerrett, 2001) and this relationship is now widely understood and accepted.

There is growing recognition that health behaviour change is more likely to occur and endure when an individual's environment is supportive of change (McLeroy, Bibeau, Steckler, & Glanz, 1988). Social-ecological perspectives recognise that society is composed of interconnected elements: individual level, interpersonal, organisational, community, and

social, and that these invariably influence one another (Bronfenbrenner, 1977). People who are attempting change are influenced not only by their immediate settings but also by the broader social contexts (both formal and informal) in which these settings are embedded. Moreover, individual level interventions are often resource-limited in their ability to maintain long-term support and they often do not link in directly with wider social networks and whānau. This buddy-intervention was designed to address these common limitations by engaging non-health professionals to provide intervention components and ongoing support.

Buddy systems generally operate so that two people work together and are able to monitor and help each other; usually for the purpose of orientation or providing support, mentoring, enhancing safety, learning, or motivation, or a combination of these (see also Hurdle, 2001, for a review of social support in health promotion). However, there is a paucity of evidence for the incremental effectiveness of buddy versus non-buddy interventions in health-care and this trial aimed to add knowledge in this domain within the Motivational Interviewing (MI) framework.

### RATIONALE

The trial evaluated buddy-Motivational Interviewing (a novel experimental adaptation of Motivational Interviewing) with pro-active email follow-up, compared to usual-care Motivational Interviewing (a proven health promoting intervention) with pro-active email follow-up, for the advancement of more physically active lifestyles, over the study duration of one year. Motivational interviewing (MI) has become a well-recognised and evidence based communication style or method of client-centred counselling and the application of MI continues to grow at a rapid pace (Burke, Arkowitz, & Menchola, 2003; Hettema, Steele, & Miller, 2005;

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Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010; Martins & McNeil, 2009; Vasilaki, Hosier, & Cox, 2006) and many sources provide thorough explanations and descriptions of its application in health-care and other settings (Arkowitz, 2008; W. R. Miller & Rollnick, 2002, 2009; William R. Miller & Rollnick, 2013; W. R. Miller & Rose, 2009; Rollnick, Miller, & Butler, 2008). A central tenet of MI is that the intervention is collaborative in nature and defined by a partnership between the practitioner and the client. Fundamentally, MI involves the activation of peoples' own motivation for change and MI involves a guiding style with the practitioner actively engaged in eliciting the client's intrinsic motivations for change.

Active social engagement is important for health and motivational-buddy relationships may confer useful individual-level and inter-personal effects (health collaterals). The implication for practice is potentially improved cost-effectiveness and reach. In terms of cost-effectiveness, the recruitment of volunteer community level support has the potential to reduce demand on the health care workforce. In terms of reach, community engagement and lay-participation in care is seen as a major thread in health promotion, as is the need to explore the issues and problems concerned with developing educative and supportive roles (Meyer, 1993; WHO, Health and Welfare Canada, & Canadian Public Health Association, 1986).

## METHODS

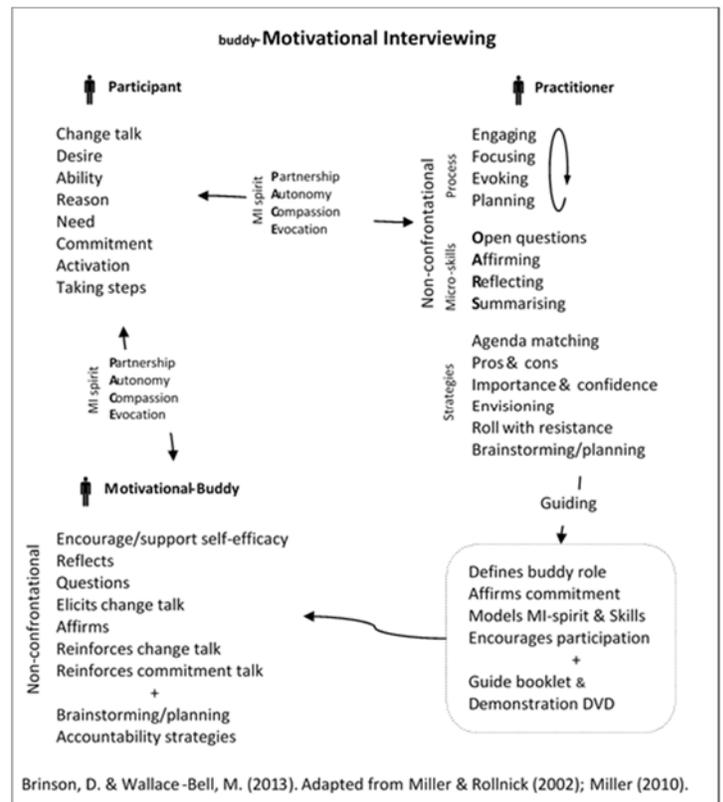
The research design was a pragmatic, parallel group randomised controlled trial (RCT). Blinding the investigator and the participants to the treatment received was not possible; however, the outcome data were collected via self-report on-line survey. Qualitative exit-survey data were also collected to supplement the findings and provide information on various process outcomes. All procedures were reviewed and approved by the University of Canterbury Human Ethics Committee. The study aim was to investigate the relative effectiveness of MI delivered in a buddy-system context as compared to usual (one-on-one) motivational interviewing. The main hypothesis tested was that participants in the experimental group would self-report relatively higher levels of physical activity behaviour change (higher leisure time/voluntary physical activity, reduced total sitting time per day, higher cardiovascular fitness and greater body weight loss) as compared with control group participants and that the treatment fidelity would be equivalent in each group.

The study was conducted in Christchurch New Zealand at the University of Canterbury Health Sciences' clinic with volunteer participants (n = 60). Potential participants were excluded if in unstable health or if physical activity was contraindicated. A two-step consent/randomisation strategy was used to reduce rates of non-compliance and drop-out in the control group by reducing the possibility of resentful demoralisation. Block randomisation was used via the sealed envelope method (Roberts & Torgerson, 1998). More detail of the study methodology can be found in the previously published study protocol (Brinson, Wallace-Bell, Kirk, & Hornblow, 2013).

## The Experimental Intervention

Motivational Interviewing, delivered by a trained MI therapist, formed the basis of the buddy-MI intervention. Figure 1 illustrates the buddy-MI adaptation and how the motivational-buddy component is oriented within the model. Each client (participant) self-selected their own motivational-buddy (either their partner/spouse of someone from their family or peer group). The intervention protocol did not set parameters within which the buddy pair was expected to fit and clients were invited to self-recruit their *best choice* or *best fit* buddy (with further guidance being provided only if requested). In buddy-MI the therapist primarily delivers MI but also works with the participant (client) and his/her motivational-buddy to build a therapeutic relationship in which different basic elements of social

exchange such as support, reciprocity, accountability and role-modelling may occur and can potentially be channelled to positive effect.



**Figure 1**

Schematic of the buddy-MI intervention, adapted from Miller and Rollnick (2002), Miller (2010) and other related materials

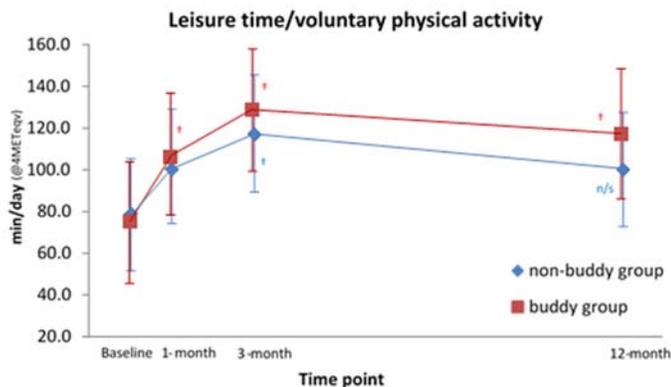
Prior to any in-session time, each buddy was provided with a training booklet and an instructional/demonstration video. The training resources introduced some of the fundamentals of MI and behaviour change generally, including a description of a non-judgmental guiding style, the idea of change versus status quo, the relevance of personalised goals and values, useful ways to give advice and information (using conditional language) and the importance of avoiding any type of confrontation, directing, arguing or contempt and the importance of being supportive and affirming and reinforcing of change. In this way, instruction and guidance in *motivationally-consistent* communication was first provided via the buddy learning package and then reinforced via in-session modelling by the therapist. The goal was not to transform buddies into competent MI therapists, but to guide buddies towards being motivationally consistent in their interactions and on the whole adherent to MI fundamentals: to demonstrate the *spirit* of MI. For the purposes of this study, we drafted the following technical definition of a motivational-buddy:

*A person who is an agent for change via the provision of social support within a motivational partnership: by striving to exert a positive influence in the direction of change both 'in-session' (within structured Motivational Interviewing sessions) and 'out-of-session' (this comprises all other buddy-to-client interactions in day-to-day life). Support means actively trying to be of assistance to the client in any way possible, including providing emotional support,*

*feedback, help with tangible needs, and any other inputs of time, effort, or other material resources. An effective motivational-buddy demonstrates compassion and understanding, respects client autonomy, expresses unconditional positive regard, and is primarily invested in helping the client to explore his or her own reasons for change and helping the client to move toward, adopt and maintain a specific target behaviour(s).* (Brinson, 2014, p. 178)

Generally, the focus of the motivational interviewing sessions was on engaging the client and their motivational-buddy in discussions about change. The buddy was encouraged to engage in the discussions and offer reflections on client or therapist statements, question, affirm, support and reinforce change and commitment statements and/or assist with brainstorming and planning. MI can involve the use of a range of standard strategies to elicit change talk (Miller & Rollnick, 2002) including importance and confidence scaling, pros and cons, envisioning and planning for change. Buddy specific adaptations of these standard MI strategies generally involved asking the buddy to provide an additional perspective of the client or to relay their observations of the client's past challenges, efforts or achievements (often buddies provide these unprompted, along with other positive client attributes) and this can lead to client statements about change. Brainstorming and elaborating on the types of out-of-session interactions (e.g. email support, phone, face-to-face, exercise activities) and the style of communication/accountability that might serve to strengthen the buddy relationship was another common discussion theme.

The frequency, timing and duration of the treatment were largely determined by the participants. The intervention was intended to fit within a 50-minute hour format. Typically, participants attended two sessions (<1-2hrs total) booked approximately a fortnight apart. Beyond this, participants could schedule further sessions to suit their individual needs (a mean of 2.17 sessions total per participant were delivered over the 12-month intervention period). Therapist initiated follow-up emails were scheduled for one or two days after each and every session. These follow-



**Figure 2**

Estimated average minutes of leisure time physical activity per day and 95% confidence intervals. Includes leisure walking, moderate and vigorous leisure activity, exercise and active transport: all scaled to moderate intensity equivalent intensity. Adjusted for age, gender, season, BMI at baseline, hours of sitting per day at baseline, generalised self-efficacy at baseline, exercise specific self-efficacy at baseline, social support, and the presence of physical limitations and/or injury.

\* Statistically different from baseline (<0.05)

† Statistically different from baseline (<0.01)

up emails took the form of a personalised note thanking the participant/buddy for their participation and confirming the next

appointment time. Each follow-up note also included one complex reflection and an affirmation relating to a key point from the previous MI session.

The therapist/PhD level researcher holds a Bachelor of Sports Coaching (BSpC) and a Masters degree in Health Sciences (MHealSc) including sports psychology and MI papers, and a three-day training workshop specific to the MITI 3.1.1 instrument (Moyers, et al., 2010). From this baseline, the therapist/researcher received supervision and feedback (including fidelity monitoring, see Table 2) spanning the intervention period from a University-based PhD level MI trainer; a member of the Motivational Interviewing Network of Trainers (MINT).

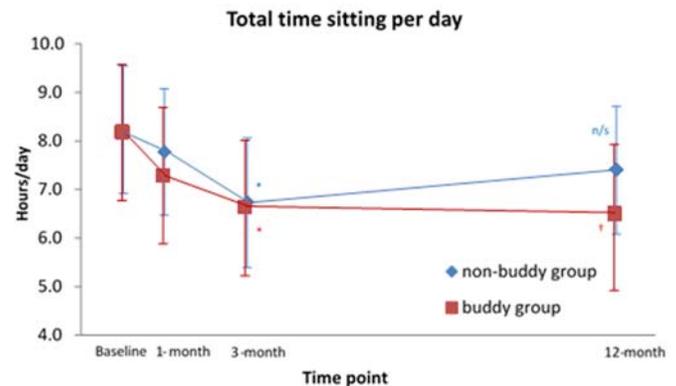
### The Active Control Intervention

The control group MI intervention differs from the experimental intervention only in that it involves no motivational-buddy.

## RESULTS

The results are presented in three distinct sub-sections, namely the effectiveness results, the treatment fidelity results and finally brief qualitative findings as derived from the exit-surveys. The study design allowed for measuring participants progress over time and the resultant repeated measures data consists of multiple measures of the main outcomes across four fixed time-points. It was not feasible to stratify the sample for gender, age or ethnicity and as a result, the groups were not balanced. Therefore, mixed-effects linear regression was used to adjust all of the parameter estimates for age, gender, season, BMI at baseline, hours of sitting per day at baseline, generalised self-efficacy at baseline, exercise specific self-efficacy at baseline, social support, and the presence of physical limitations and/or injury. Loss at 12 month follow-up was minimal in both groups (n=3 experimental, n=1 control, total 6.6%). Analysis was undertaken on an intention-to-treat basis.

**Figure 3**



Estimated average minutes of sitting time per day and 95% confidence intervals. Adjusted for age, gender, season, BMI at baseline, hours of sitting per day at baseline, generalised self-efficacy at baseline, exercise specific self-efficacy at baseline, social support, and the presence of physical limitations and/or injury.

\* Statistically different from baseline (<0.05)

† Statistically different from baseline (<0.01)

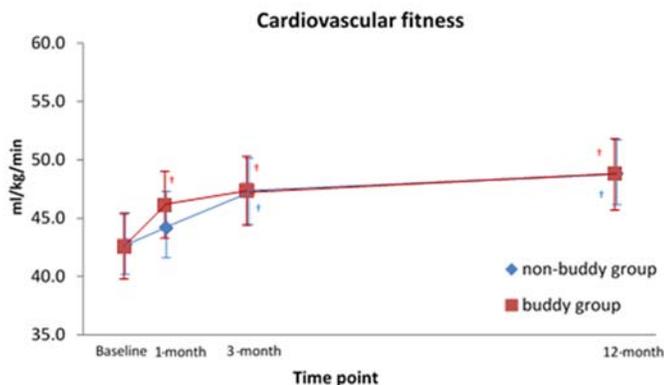


Figure 4

Estimated average cardiovascular fitness level (VO2max) and 95% confidence intervals. Cardiovascular fitness as estimated from the Cooper 12-min fitness test and presented as maximum oxygen consumption (VO2max) measured in mlO2/min/kg) was adjusted for age, gender, season, BMI at baseline, hours of sitting per day at baseline, generalised self-efficacy at baseline, exercise specific self-efficacy at baseline, social support, and the presence of physical limitations and/or injury.

\* Statistically different from baseline (<0.05)

† Statistically different from baseline (<0.01)

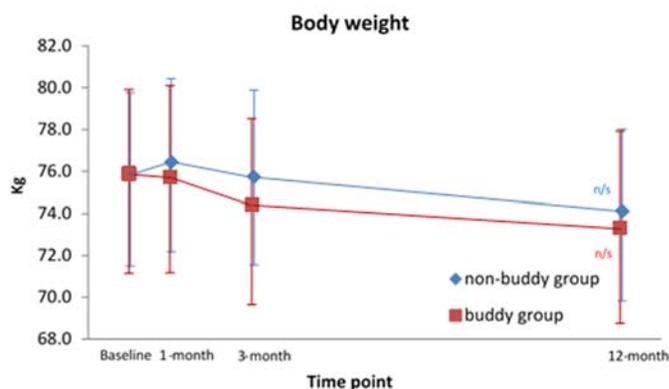


Figure 5

Estimated average reduction in body weight and 95% confidence intervals. On average, the participants in the experimental group lost 2.6kg over the course of the study vs control participants 1.8kg: although this was not primarily a weight-loss intervention.

Table 1

Summary of main outcomes: change over time compared to baseline

Outcome	Group	Baseline	1-month (Δ from baseline)	p-value at 1-month vs baseline*	3-months (Δ from baseline)	p-value at 3-months vs baseline*	12-months (Δ from baseline)	p-value at 12-months vs baseline*	Effect size at 12 months vs baseline (Cohen's d)	Effect size at 12 months between-groups (Cohen's d) (Δ natural units exp. vs control)
Leisure PA	CTRL (min)	79	100 (+21)	n/s	117 (+38)	p=0.0013	100 (+21)	n/s	d = 0.5	d = 0.42
	EXP (min)	75	106 (+31)	p=0.007	128 (+53)	p=0.0001	117 (+42)	p=0.007	d = 0.93	+ 21 min
Sitting	CTRL (hrs)	8.2hrs	-0.43hrs	n/s	-1.47hrs	p=0.03	-0.79hrs	n/s	d = 0.31	d = 0.32
	EXP (hrs)	8.18hrs	-0.09hrs	n/s	-1.54hrs	p=0.016	-1.68	p=0.01	d = 0.68	- 54min
Fitness	CTRL (VO2max)	42.7	+3.5%	n/s	+10%	p=0.002	+12%	p=0.001	d = 1.54	d = 0.0
	EXP (VO2max)	42.5	+8.4%	p=0.02	+11%	p=0.001	+12%	p=0.001	d = 1.55	0.0%
Weight	CTRL (kg)	75.9	-0.05	n/s	-0.2	n/s	-1.8	n/s	d = 0.52	d = 0.07
	EXP (kg)	75.8	-0.17	n/s	-1.48	n/s	-2.58	p=0.006	d = 0.77	0.78kg
Ex self-efficacy†	CTRL	13.27	+2.02	p<0.001	+2.07	p=0.001	+2.72	p<0.001	d = 0.96	d = 0.05
	EXP	12.74	+2.74	p=0.001	+3.56	p=0.002	+3.21	p=0.001	d = 0.121	0.49 point
HRQOL Physical‡	CTRL	53.47	+1.27	n/s	+1.61	n/s	+1.36	n/s	d = 0.27	d = 0.28
	EXP	54.69	+0.033	n/s	+1.42	n/s	+2.31	n/s	d = 0.45	0.95 point
HRQOL Mental	CTRL	44.84	+3.88	p=0.05	+5.08	p=0.017	+4.54	p=0.03	d = 0.61	d = -0.39
	EXP	43.21	+3.84	p=0.05	+4.34	p=0.03	+1.92	n/s	d = 0.26	-2.62 point

Leisure PA=leisure and voluntary physical activity including leisure walking, moderate and vigorous leisure activity, exercise and active transport (all scaled to moderate intensity equivalent intensity); HRQOL= health related quality of life.

\*Within-group compared to baseline. No statistically significant between-group differences.

† Note: self-report physical activity can be subject to over-reporting, however it is reasonable to assume that the between-group differences are valid and it is therefore the size of the differences that are important rather than absolute values.

Taken together, the four behavioural/physical outcomes share a common pattern (Figures 2-5): that the participants in both groups generally improved and those participants in the experimental buddy-Motivational Interviewing group tended to out-perform the usual-care group. Table 1 summarises the physical, behavioural and psychosocial outcomes. Leisure time activity/exercise (technically voluntary activity including leisure walking, moderate and vigorous leisure activity/exercise and active transport, all scaled to moderate intensity equivalent) increased

in both groups and on average, buddy-group participants exercised 21 minutes per day more than control group participants. At 12-months, participants spent less time sitting per day: on average, 47 minutes less in the control group and 92 minutes less in the buddy-MI group. Participants in both groups finished the trial, on average, functionally fitter by approximately 12%. Finally, participants in the buddy-MI group reported losing an average 2.58kg at the 12-month follow-up compared to control participants achieving a 1.8kg average reduction (note that this was not primarily a weight loss/management intervention but many participants

adopted weight loss goals). The repeated-measures design employed in this study ensured the opportunity to observe any changes in the estimates of effect over four time-points. Importantly, this temporal dimension greatly increases the utility of the data as it allows for the illustration of patterns and trends that are otherwise obscured by single point-in-time estimates.

### Treatment Fidelity

Table 2 shows the MI therapist's fidelity scores based on random sampling of four interviews taken from each group (T1= first quarter of the intervention period) and then from the last quarter of the intervention period (T2) using the MITI 3.1.1 instrument (Moyers, Martin, Manuel, Miller, & Ernst 2010). These results can be seen to be consistent across groups and across time. The utterances of the motivational-buddies were not assessed. Table 2 also shows that the average number of clinic sessions and the average number of therapist-participant email interactions per participant were essentially the same for both groups.

**Table 2**

Treatment fidelity scores across time

Measure	T1 Control group	T1 Exp. group	T2 Control group	T2 Exp. group
Global clinician rating	4.45	4.13	4.0	4.0
Reflection to Question Ratio (R:Q)	2.2	2.1	2.54	2.42
Percent Open Questions (%OC)	76%	78%	79.2%	80.4%
Percent Complex Reflections (%CR)	73%	86%	71.2%	73.1
Percent MI-Adherent (% MIA)	100%	100%	100%	100%
Number of clinic sessions	-	-	2.27	2.17
Number of email exchanges	-	-	17.83	16.57

Treatment fidelity scores via the MITI 3.1.1

OQ = Open Question; CR = Complex Reflection; R:Q = Total Reflection to Question ratio; %CR = the percentage of complex reflections out of the total number of reflections; %OC = the percentage of open questions out of the total number of all questions

## DISCUSSION

Both groups demonstrated statistically significant and meaningful increases in the main outcomes, mostly extending out to the 12-month follow-up. While the between-group differences were not statistically significant, the experimental group data indicates the general trend that the experimental group consistently out-performed the control group by potentially clinically important increments. Based on these quantitative findings and with reference to the qualitative data (while also considering the limitations of the study) it is proposed that the intervention met the study goals of demonstrating that the social support arrangement (motivational-buddy system) was feasible and that some favourable differential treatment effect was evident. Therefore, these findings indicate that buddy-MI does merit future development and implementation in primary health-care settings.

Figures 2-5 illustrate both the MI alone and the buddy-MI groups changed over time in the desired direction but the addition of the buddy enhanced and brought forward the changes in time. That is, for the buddy-MI group the change was seen as early as one-month but for the control group it was three-months before significant change from baseline was seen. It is known that *spontaneous improvement* accounts for some of the response observed in wait-list participants in psychological trials (Rutherford, Mori, Sneed, Pimontel, & Roose, 2012). Participants can acutely experience improvement even without treatment. Although this effect can reasonably be expected to apply equally to both groups, it might

be the case that a differential effect occurs as a result of the more complex cognitive, psycho-social and practical steps involved in a person recruiting a motivational-buddy. This application of *effort* might amount to treatment and these participants may therefore progress more quickly. Qualitative findings from this study suggest that the establishment of *accountability* appears to be a useful motivator. We believe that the operationalisation and measurement of accountability and its possible incremental benefits within buddy-MI merits further research.

One strategy used to improve the programme efficiency was the blending of administrative email communications with motivational and supportive prompts. Follow-up emails aimed to include motivationally consistent elements. This subtle use of a motivationally consistent communication style increased the efficiency of the administrative time invested and probably contributed to the high study retention (93%) at the 12-month follow-up (a valid outcome measure as drop-out can be problematic in health behaviour change programmes).

The qualitative data indicated that positive collateral health effects did occur for some buddies. However, the programme evaluation did not include the expanded quantitative data collection methods that would be required to directly measure any health effects relating specifically to buddies, although this is worthy of future investigation. Within randomised controlled trials this would necessitate a much larger sample size and resultant investment in resources because the effect size of a collateral health effect is likely to be significantly smaller than the primary effect. Drop-out and turnover of buddies (per participant) would also erode the power of the study to detect a significant effect.

Probably the most significant area still to be investigated is the question of buddy-training (in style and strategy) versus buddy-selection (matching) as this may directly influence the buddy-participant interaction and by implication the potential size of any therapeutic effect. Some authors have suggested that buddy-behaviours might be somewhat intractable and that motivational-buddies may quickly return to their default (motivational) style when no longer under the influence and guidance of researchers or programme providers (see Carlson, Goodey, Bennett, Taenzer, & Koopmans, 2002; Glasgow, Klesges, & O'Neill, 1986; Park, Tudiver, & Campbell, 2012 for more detailed perspectives). The relative merits of training buddies versus selecting naturally-supportive buddies needs to be rigorously evaluated.

This study took a relatively *laissez-faire* approach to the buddy relationship generally, the intention being to let these relationships play out as they might in real world settings. More input was probably required to help participants make the best choice from the potential buddies they have available. Taken together with previous observations, this study's findings prompt the recommendation that future research initially focuses on refining ways to actively help participants identify and select their 'best choice' motivational buddy from those available to them (selection). Even with optimal selection, some level of training will be required, however the optimal amount and methods of training required to meet the minimum effective dose are not really known. Defining and operationalising these two training characteristics is an important next research step before translation into routine clinical practice.

Intention-to-treat methods were used in this trial and one important feature of pragmatic trials relates to protocol deviation. Protocol deviation or protocol non-adherence by participants is common in real world settings. An example of protocol deviation is the formation of spontaneous buddies in the control group. In this example, control group participants might spontaneously form a buddy relationship outside of the study protocol, although in the case the effect would be to dilute any between-group effect.

One further recommendation for research concerns treatment fidelity/programme evaluation. Treatment fidelity strategies help to ensure that potentially effective treatments are not prematurely discarded or unsuccessful treatments implemented (Bellg et al., 2004). Opportunities still exist to better integrate treatment receipt and treatment enactment evaluation measures and strategies (Bellg et al., 2004), with the aim being to enhance future iterations of the programme. This means measuring how well participants engage with the treatment within MI sessions and also actually quantifying and defining the support (treatment) provided by the buddy out-of-session (capturing quantitatively the specific behavioural skills and strategies actually implemented by buddies as they provide their day-to-day motivational support).

### What More Do We Need to Know about buddy-MI Practice?

This study demonstrated that the behavioural outcomes and the psychological outcomes improved rapidly at the beginning of the intervention period (in most cases, most of the change had occurred by the one month follow-up). Therefore, it is suggested that this initial period is probably important for long-term success and that it presents an opportunity for providers to capitalise on perhaps transient states of readiness and self-belief. One key aspect of this trial was the focus on providing pro-active email support, including prompting and follow-up that aimed to facilitate these initial steps towards change. What might normally be thought of as administrative tasks can potentially give rise to additional opportunities for clinic staff to provide reinforcement and praise. This style and quality of interaction in a clinic setting would require those performing routine administrative tasks (e.g. taking a phone booking) to be appropriately trained. This trial was based on a clinic intervention component that typically involved 2x20-50 minute sessions. One question that arises is can the intervention be translated to fit into typical primary care contexts, essentially from 50 minute sessions into 10-15 minute General Practice slots? This was not the model tested and therefore further research would be needed to answer this question. The model tested was envisioned to be implemented *per-protocol* in that a dedicated member of a primary care team would be trained in buddy-MI and motivationally-consistent follow-up and would case-manage clients in their health behaviour change endeavours. In this trial, all participant exchanges were motivationally consistent and in the style of Motivational Interviewing and maintaining. This approach is very different from systems that use automated mail-outs and generic prompts. The resource requirements of this pro-active email approach should not be underestimated nor should its importance.

### Implications for Health Promotion Policy

Buddy-Motivational Interviewing can potentially reduce health-resource utilisation, particularly if an optimal balance can be found between investing resources in the buddy (e.g. training and/or selection/recruitment) and providing direct treatment for the patient. At the policy level, a greater emphasis should be placed on shaping populations' health behaviours by utilising naturally occurring social capital, using methods such as buddy-systems. These approaches should be incorporated into policy and health promotion philosophies. Physical activity promotion programmes are generally designed to support people in their efforts to adopt and maintain a complex range of behaviours over time. The findings from this study suggest that social influence can be purposefully focused (or introduced) to good effect within an intervention such as buddy-Motivational Interviewing. This purposefully focused approach potentially enables continuous-lifestyle-intervention using the self-sustaining social capital that may already exist in nearby social networks.

## Conclusions

Buddy-Motivational interviewing is an approach that could be incorporated into existing programmes or one that can potentially form the basis of future stand-alone-programmes in physical activity promotion and potentially in many other primary care contexts. Programme sustainability is likely to be dependent on multiple factors, including suitable motivational-buddy selection and retention. Developing criteria for the screening and selection of more effective motivational-buddies may increase overall programme effectiveness, if this can be done in a practical way. Screening and matching may need to take into account that different participants will vary in the types of supportive behaviours they find acceptable and beneficial and these factors may also vary across different behaviour change settings. A related task is developing ways to maintain buddies enthusiasm over time.

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