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Exploring the relationship between synergy and partnership functioning factors in health promotion partnerships

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SUMMARY

Intersectoral partnerships have been identified as a useful mechanism for addressing the health challenges that face society. In theory, partnerships achieve synergistic outcomes that amount to more than can be achieved by individual partners working on their own. This study aimed to identify key factors that influence health promotion partnership synergy. Data were collected from 337 partners in 40 health promotion partnerships using a postal survey. The questionnaire incorporated a number of multidimensional scales designed to assess the contribution of factors that influence partnership synergy. New validated scales were developed for synergy, trust, mistrust and power. Pearson's correlations and multiple regression analysis were used to identify the significance of each factor to partnership synergy. Trust, leadership and efficiency were shown to be the most important predictors of partnership synergy. Synergy is predicated on trust and leadership. Trust-building mechanisms need to be built into the partnership forming stage and this trust needs to be sustained throughout the collaborative process. We need to develop systems where the best leaders are put forward for intersectoral partnerships. This should be consistent across all sectors and organizations.

Key words: synergy; trust; leadership; partnerships

INTRODUCTION

Intersectoral partnerships are an integral part of health promotion practice (Kickbusch and Quick, 1998; World Health Organization, 2005). In theory, partnerships achieve synergistic outcomes, which are more than can be achieved by individual partners or sectors working alone. In practice, partnerships have a high failure rate (Corbin and Mittelmark, 2008) and they are 'notoriously difficult' to evaluate (Butterfoss and Francisco, 2004). Weiss *et al.* (Weiss *et al.*, 2002) recommend measuring partnership synergy as a 'proxy' for effectiveness as, in theory, a partnership that has maximized synergy has achieved the full potential of collaboration. Synergy is the degree to which the partnership combines the complementary strengths, perspectives, values and resources of all the partners in the search for better solutions [(Gray, 1989), p. 5] and is generally regarded as a product of a partnership. Lasker and Weiss (Lasker and Weiss, 2003) note that there have been few studies on synergy, its determinants or its measurements. The present study aims to measure partnership synergy and to identify the most important factors that influence synergy in the context of health promotion partnerships.

BACKGROUND

An extensive literature review (Jones, 2008, Unpublished PhD thesis), covering health promotion partnerships (Roe *et al.*, 1999), community health partnerships (Alexander *et al.*, 2003; Baron-Epel *et al.*, 2003; Lempa *et al.*, 2008) and more general management research on partnerships (Boyle, 1999; Child and Faulkner, 1998), reveals that few studies have measured partnership synergy or identified its key predictors. A majority of studies are qualitative in nature using single or multiple case study designs, for example, Davies (Davies, 2002) found that synergy was described in 'vague and soft' terms in the UK's regeneration partnerships. There has been only one cross-sectional quantitative study that measured synergy in relation to partnership functioning factors (Weiss *et al.*, 2002). The Weiss study examined six dimensions of partnership functioning: leadership, administration and management, efficiency, non-financial resources, partner involvement and community-related challenges. Findings showed that synergy was most closely related to leadership and efficiency.

Different types of synergy have been identified, including vertical integration, shared know-how, shared resources and more effective problem-solving (Goold and Campbell, 1998). The Weiss *et al.* (Weiss *et al.*, 2002) study conceptualizes synergy as the product or capability of a partnership. A mapping study of 129 health promotion partnerships (Jones, 2008, Unpublished PhD thesis) in the Republic of Ireland, found that synergy was seen by the partnerships' lead persons as both a process and a product. In addition, when partners from these partnerships ($n = 48$) were asked to comment on the Weiss *et al.* (Weiss *et al.*, 2002) scale items, only 20% classified the items as synergy and most respondents classified the items as leadership. These findings gave rise to a number of questions. Do health promotion partners see synergy differently to other health partners? Are there cultural differences in how synergy is conceptualized in different countries?

Jones (Jones, 2008, Unpublished PhD thesis) developed a new synergy scale through an analysis of the findings from five focus groups ($n = 36$) consisting of partners from health promotion partnerships. These findings confirm that synergy in health promotion partnerships is both a process and a product (Jones and Barry, 2011). Lasker *et al.* (Lasker *et al.*, 2001) describe five determinants of synergy: partnership assets, partner characteristics, governance, leadership and partner relationships, including trust and power. Other synergy influencing factors identified from the partnership literature (Jones, 2008, Unpublished PhD thesis), include community involvement, boundary-spanning skills, trust, mistrust, power and organization culture, all of which are relevant to synergy in health promotion partnerships.

Many partnership functioning factors have been measured separately, although not in relation to synergy. Butterfoss *et al.* (Butterfoss *et al.*, 2006), Lempa *et al.* (Lempa *et al.*, 2008) and Cummings (Cummings, 2008) have measured leadership, Kegler *et al.* (Kegler *et al.*, 2007) have measured partnership skills, Metzger *et al.* (Metzger *et al.*, 2005) have measured leadership and governance and Weiner *et al.* (Weiner *et al.*, 2002) have measured management and governance. Researchers in the field have identified a need to validate the tools that have been used to measure these constructs (Granner and Sharpe, 2004; El Ansari and Weiss, 2006). No study of health promotion partnerships has measured synergy in relation to trust and power. In addition, community involvement, boundary-spanning skills, professional expertise and partner organization cultures (Jones, 2008, Unpublished PhD thesis), have not been measured in relation to synergy. The factors that feature more prominently and most often in the literature review are now discussed in turn.

Community involvement in partnerships

A key feature of community involvement in partnerships from a health promotion perspective is that community members are actively involved [(Bracht *et al.*, 1999), pp. 83–117]. Indeed some writers argue that if communities are not actively involved, the partnerships are not health promoting (Green *et al.*, 2000). Robertson and Minkler (Robertson and Minkler, 1994) define community involvement as being communities working—in equal partnership with professionals—to define and solve health problems. Communities can be members of the public, members of specific population groups or members of voluntary organizations. Lasker and Weiss (Lasker and Weiss, 2003) stress the critical role of community

stakeholders and of sufficient heterogeneity of partners to supply the range of perspectives required. Winer and Ray [(Winer and Ray, 1994), p. 49] note that successful partnerships 'need to involve minority, grassroots and end-user groups'. There have been a number of studies on community involvement in terms of partnership effectiveness. While Weiner and Alexander (Weiner and Alexander, 1998) and Minkler *et al.* (Minkler *et al.*, 2001) found limited evidence of community involvement in community health partnerships, Zahner (Zahner, 2005) showed that having a broad array of partners contributed to effectiveness.

Boundary-spanning skills

Boundary spanners have a particular set of partnership skills that enable partnerships to function more effectively. These include negotiating skills and being able to see new opportunities (Jones, 2008, Unpublished PhD thesis). Challis *et al.* [(Challis *et al.*, 1988), p. 211] and Alter and Hage [(Alter and Hage, 1993), p. 46] have identified the need for boundary spanners, or people who can connect up partners with common interests or goals. People with boundary-spanning skills have been identified in the literature as bringing a range of benefits to partnership functioning, serving as 'spark plugs' and 'collabronauts' (Williams, 2002), and establishing a climate of trust, optimism and perseverance [(Gray, 1989), p. 166]. Sullivan and Skelcher [(Sullivan and Skelcher, 2002), p. 101] argue that effective partnerships rely heavily on people with boundary-spanning skills. Mays *et al.* (1998) in a US study on community health partnerships found that boundary spanners are necessary for partnership effectiveness. People with boundary-spanning skills are particularly important in health promotion partnerships because of the well-established vertical hierarchies of professional groups.

Organization culture

Partnerships for promoting health can have partners from a wide variety of sectors and disciplines. For example, the health sector may be represented by a range of professional groups including doctors, nurses and social workers. The partnership could also have teachers, local authority personnel and business people. All of these partners bring the culture and paradigm of their profession as well as the culture of the organization they represent. They all have different 'world views' as to the nature of the problem and how it can be solved. These different organizational and disciplinary cultures influence partnership functioning [(Gray, 1989), p. 5]. Child and Faulkner [(Child and Faulkner, 1998, p. 110] argue that 'culture clashes are the most commonly cited reason for alliance failure' and, according to Challis *et al.* [(Challis *et al.*, 1988), p. 214], uni-professional cultures are formidable barriers as 'each reinforces and acts in concert'. Research into the cultural dynamics of cross-sectoral partnerships is very limited (Parker and Selsky, 2004) and views on cultural problems are largely anecdotal. However, Weiner and Alexander (Weiner and Alexander, 1998) in a study of 25 coalitions in the USA found that culture issues, such as 'turf and territoriality', were a major problem.

Trust and mistrust

Although there is no single definition of trust, it has been described from a number of different perspectives including interpersonal, interorganizational and societal (Cummings and Bromiley, 1996). These are known as the psychological, organizational and sociological constructs of trust, each of which has two distinct dimensions: trusting, which means openness and sharing, and trustworthiness, which means support and acceptance [(Solomon and Flores, 2001), p. 76; (Johnson and Johnson, 2003), p. 128]. The composite elements of trust—vulnerability and expectations—are found in most definitions (Benamati *et al.*, 2006).

There is disagreement in the literature as to whether trust and mistrust lie at opposite ends of a single continuous variable or whether they are distinct, but linked, dimensions. Benamati *et al.* (Benamati *et al.*, 2006) argue that they are distinct constructs and that low trust is not the same as mistrust. Whether distinct constructs or not, Boyle [(Boyle, 1999), p. 56], notes that mistrust is a primary barrier to collaboration. Partner organizations involved in health promotion partnerships often have a history of mistrust, such as can exist between statutory and voluntary organizations, or the private and public sectors (Baron-Epel *et al.*, 2003).

Trust is one of the most important ingredients in partnership working and 'no amount of

energy from the partners will compensate for its absence' [(Child and Faulkner, 1998), p. 6]. Gray [(Gray 1989), p. 271] also argues that trust is a prerequisite for effective partnerships. Seppänen *et al.* (Seppänen *et al*., 2007) in a systematic literature review, found major inconsistencies in the conceptualization, operationalization and measurement of trust. The authors concluded that the measurement of trust is very underdeveloped. Costa *et al.* (Costa *et al*., 2001) studied 112 health and social care teams and showed that trust is positively related to team performance, satisfaction and commitment. Armistead *et al.* (Armistead *et al*., 2007) in action enquiry research found that although trust was seen as a key element of multisector partnerships, it was an intangible phenomenon experienced more in its absence than its presence.

Power

According to Winer and Ray (Winer and Ray, 1994) power is always present in partnerships and it can be viewed as having a positive effect, as in moving things forward, or a negative effect as in holding things back. The individual partners have their own power depending on their skills and resources, and the partnership itself has power. Power is an important partnership functioning factor in terms of facilitating cooperation and can be seen as the functional equivalent of trust [(Bachmann, 2006), p. 393]. Gray [(Gray, 1989), p. 122] argues that shared power is central to collaboration. Hemphill *et al.* (Hemphill *et al*., 2006) argue that research studies have largely ignored the issue of power in partnerships, although anecdotal evidence suggests that shared power is far from the norm. Pratt *et al.* [(Pratt *et al*., 1998), p. 5] note that 'local power struggles . . . can become a painful distraction that can last for years'.

Leadership

Collaborative leadership in partnerships, called 'integrative' leadership by Silvia and McGuire (Silvia and McGuire 2010), is characterized by 'capabilities for fixing public problems in a shared-power world'. These capabilities include understanding the social and political contexts, communicating and sharing a vision and implementing policy decisions. Integrative leadership is required in situations where there is no one person or organization in charge, and power is distributed across a number of organizations. In health promotion partnerships, this shared leadership is particularly important because of the different sectors, organizations and disciplines involved, each of which have their own leaders. Leadership in the partnership is dispersed formally or informally among the partners. A partnership may well have a 'lead' organization or a 'lead' person as well but the overall partnership leadership is shared. Leadership in partnerships has been measured more often than any other partnership functioning factor (Jones, 2008, Unpublished PhD thesis). Weiss *et al.* (Weiss *et al*., 2002) found that collaborative leadership contributed the most to partnership synergy. Leadership has also been found to have a positive effect on levels of partner participation (Metzger *et al*., 2005) and contributes significantly to partnership capacity (Lempa *et al*., 2008). Lempa *et al.* (Lempa *et al*., 2008) concluded that the 'importance of leadership is the greatest implication for practice that emerges from the study'.

Administration, management and efficiency

Administration and management of a partnership involves *inter alia*: communicating effectively, coordinating activities, managing grants and funds, orientating new partners and evaluating the impact of the partnership on health (Weiss *et al*., 2002). Weiss *et al.* (Weiss *et al*., 2002) found that efficiency was a significant predictor of synergy and that synergy may also be related to how a partnership is administered and managed. Baron-Epel *et al.* (Baron-Epel *et al*., 2003) showed that how a partnership is managed is a key component of its success.

The present study

Reviewing the literature reveals very few studies where partnership functioning factors have been measured simultaneously in relation to synergy, especially in health promotion partnerships (Jones, 2008, Unpublished PhD thesis). This cross-sectional study therefore, sets out to measure partnership synergy in a sample of 40 health promotion partnerships, and simultaneously measure partnership functioning factors that have been identified as influencing synergy. Both the Weiss *et al.* (Weiss *et al*., 2002) and the Jones and Barry (Jones and Barry, 2011) synergy scales were used in this study. The

factors were selected as follows: Weiss *et al.* (Weiss *et al.*, 2002), showed that leadership ($\beta = 0.41$, $P < 0.05$) and efficiency ($\beta = 0.27$, $P < 0.05$), were significant predictors of synergy with administration and management almost significant ($\beta = 0.19$, $P < 0.10$). These three measures were incorporated into the present study. Non-financial resources were also almost significant ($\beta = 0.14$, $P < 0.10$) in the Weiss *et al.* (Weiss *et al.*, 2002) study, and in the present study these items were divided into two separate measures—community assets and boundary-spanning skills—because they are viewed as distinct factors in the literature. The four new factors: organization culture, trust, mistrust and power, were selected as they featured most prominently in the literature as critically important functioning factors. Partnership duration was initially included but as it had no relationship with either synergy scale or the predictors it was omitted from the regression analysis.

METHODS

Sample

Potentially eligible partnerships were identified from a database of health promotion partnerships ($n = 129$) that was developed in an earlier study (Jones, 2008, Unpublished PhD thesis). The criteria for selection were that partnerships had to have been in existence for 12 months or more, have a minimum of five partners and have a core health promotion purpose. Recruitment of partnerships took place between June and September 2006. Initial contact was made by telephone or email with the partnerships' chairs/leads. Of the 73 partnerships deemed to be eligible, 42 partnerships agreed to participate in the study (58%). The others either did not want to be involved ($n = 7$), were uncontactable ($n = 3$), or the partnership had become defunct ($n = 21$). Two partnerships participated in the pilot study ($n = 30$ partners) leaving 40 for the main study. After a partnership agreed to participate, questionnaires were posted to each of the partnership's chairs/leads and to all partners, accompanied by a personally addressed, hand-signed covering letter. A stamped addressed envelope (SAE) was provided. A reminder card and a reminder letter, with another copy of the questionnaire and an SAE, were sent after 2 and 4 weeks, respectively.

Measures

Almost all of the questions were closed-ended and incorporated a number of specifically designed and validated multidimensional scales, to assess the contribution of factors to partnership synergy. [Copies of all the new scales used in the study are available from the corresponding author.] A majority were in the form of five-point Likert scales, where 5 is always and 1 is never, with a 'don't know' option (Oppenheim, 1992; DeVellis, 2003). Questions and scales were based on a review of the existing literature and instruments that have been used in other studies (Weiss *et al.*, 2002). New scales were developed and validated for synergy, positive trust, mistrust and power. Care was taken to ensure that all scale items had a consistent group referent so respondents were asked questions pertaining to the partnership not themselves (Verran *et al.*, 1992).

Partnership synergy was assessed using two scales: a nine-item, five-point scale developed by Weiss *et al.* (Weiss *et al.*, 2002) and an eight-item, five-point scale developed by Jones and Barry (Jones and Barry, 2011). The findings presented here are for the Jones and Barry (Jones and Barry, 2011) synergy scale, the Weiss *et al.* (Weiss *et al.*, 2002) scale and the combined synergy score of both scales. The Weiss *et al.* (Weiss *et al.*, 2002) scale is also used to validate the Jones and Barry (Jones and Barry, 2011) scale. Pattern coefficients ranged from 0.696 to 0.833. Sample items for the Jones scale include: 'feelings of energy, excitement and passion' and the 'work of the partnership is broken down and shared by all the partners'.

Organization culture was assessed with a nine-item, five-point scale based on the literature review (Jones, 2008, Unpublished PhD thesis). Pattern coefficients for the single factor solution ranged from 0.674 to 0.788. Sample items include: 'the partnership has a common language to talk about health' and 'professionals on the partnership have a tendency to assume they know the answers before the questions have even been asked'. Leadership was assessed with an 11-item, five-point scale developed by Weiss *et al.* (Weiss *et al.*, 2002). Pattern coefficients for the single factor solution ranged from 0.767 to 0.893.

Community assets were measured with a five-item, five-point scale using a combination of two items from Weiss *et al.* (Weiss *et al.*,

2002) and three from Jones (Jones, 2008, Unpublished PhD thesis). New items include: 'the publics' perspective' and 'local knowledge'. Pattern coefficients for the single factor solution ranged from 0.640 to 0.887. Boundary-spanning skills were assessed with a 14-item, five-point scale based on the literature review. Pattern coefficients for the single factor solution ranged from 0.687 to 0.846. Sample items include: 'ability to work effectively with the community' and 'ability to see new opportunities for the partnership'.

Trust was measured with a 14-item, five-point scale developed by Jones (Jones, 2008, Unpublished PhD thesis). Factor analysis showed two distinct components, positive trust and mistrust, which were kept as separate subscales and are reported on separately here. Pattern coefficients for positive trust ranged from 0.684 to 0.847 and for mistrust from 0.666 to 0.863. Sample positive trust items include: 'partners eagerly volunteer to take on tasks associated with the partnership' and 'partners keep the promises they make to the partnership'. Sample items for mistrust include: 'partners meet in unofficial groups to progress their own agenda with a view to undermining the main partnership agenda' and 'partnership time and energy is wasted due to mistrust'.

Power was assessed with a nine-item, five-point scale developed by Jones (Jones, 2008, Unpublished PhD thesis). Although the power scale yielded two components, all items were retained in one scale following parallel analysis [(Tabachnick and Fidell, 2007), p. 644]. Pattern coefficients ranged from 0.512 to 0.918. Sample items include: 'credit is shared among all the partners' and 'partners withhold their expertise or apply it arrogantly'. Administration and management of the partnership was measured using an eight-item, five-point scale adapted from Weiss *et al.* (Weiss *et al.*, 2002). Pattern coefficients for the single factor solution ranged from 0.737 to 0.885. Efficiency was assessed using a three-item, five-point scale adapted from Weiss *et al.* (Weiss *et al.*, 2002). Pattern coefficients for the single factor solution ranged from 0.826 to 0.894.

Table 1 shows the descriptive properties of the measures used in the study including Cronbach's alpha, which shows that all scales have more than adequate reliability (Pallant, 2007). Mean scores are included in this table for partner- and partnership-level data. As can be seen the mean scores are identical for both levels of data but standard deviations for partnership-level are about half that of partner-level data. This means that the scores for partnership level data are more bounded and constrained than for partner-level data. The range of scores shown in the table confirms this finding. This loss of variability is an inevitable consequence of using mean scores [(Hannan, 1991), p. 35].

Principal components analysis (PCA) was used to establish whether each scale has a simple structure and to identify any subscales prior to carrying out the regression analyses. Where more than one component was identified, Promax rotation was performed (Pallant, 2007). All scales were shown to have a simple structure (i.e. a single component) with excellent (>0.7), very good (0.6–0.69), or good (0.5–0.59), factor loadings [(Tabachnick and Fidell, 2007), p. 649]. The percentage of variance explained for each PCA ranged from 55 to 72% which is more than adequate. Convergent and discriminant validity were established for positive trust, mistrust, both synergy scales, leadership, administration and management and power. Corrected item-total correlations for each scale were correlated with the total scores of the other scales. All items correlated more highly with their own scale than with any other scale, indicating their validity. The Jones and Barry (Jones and Barry, 2011) synergy scale correlated very highly (0.82, $P < 0.01$) with the Weiss *et al.* (Weiss *et al.*, 2002) scale indicating they are both measuring synergy.

Statistical analysis

SPSS version 18.0 was used to carry out all statistical analyses. Two units of analysis are considered in this study, individual partner-level data analysis where the unit of analysis is at partner level, and aggregated partnership-level data analysis where the unit of analysis is at the partnership level. Reliability and validity tests of all measures were carried out on individual partner-level data ($n = 337$). Pearson's correlations and regression analysis were carried out on partnership-level data.

Prior to carrying out the statistical analyses, partner- and partnership-level scores for all the scales were obtained by calculating the scale scores for each respondent and then calculating an aggregate score for respondents within each

Table 1: Descriptive properties of the measures for partner-and partnership-level data, including Cronbach's alpha, variances, means and standard deviations

Measure	Number of items (Possible Scores)	Partner level means (SD)	Actual range of scores	Cronbach's alpha	Partnership level means (SD)	Actual range of scores
Synergy Jones ($n = 312$)	8 (8–40)	28.8 (5.0)	8.0–40.0	0.91	29.1 (2.7)	23.2–34.7
Synergy Weiss *et al.* (Weiss *et al.*, 2002) ($n = 305$)	9 (9–45)	31.9 (6.1)	9.0–45.0	0.93 (0.93)[a]	31.9 (3.2)	24.6–39.4
Community assets ($n = 292$)	5 (5–25)	19.3 (3.1)	10.0–25.0	0.81	19.2 (1.7)	15.7–23.3
Boundary-spanning skills ($n = 255$)	14 (14–70)	52.7 (8.6)	26.9–70	0.95	52.6 (4.6)	41.3–67.3
Organization culture ($n = 278$)	9 (9–45)	31.9 (6.9)	12.0–45.0	0.90	N/A	N/A
Positive trust ($n = 309$)	9 (9–45)	35.4 (5.6)	15.0–45.0	0.91	35.5 (3.0)	29.7–41.3
Mistrust ($n = 258$)	5 (5–25)	20.4 (3.3)	6.0–25.0	0.82	20.4 (2.1)	13.6–23.9
Power ($n = 290$)	9 (9–45)	36.2 (5.4)	20.0–45.0	0.87	36.1 (2.9)	29.6–41.5
Leadership ($n = 307$)	11 (11–55)	38.9 (9.3)	11.0–15.0	0.96 (0.97)[a]	38.7 (5.1)	27.2–50.0
Administration and management ($n = 298$)	8 (8–40)	29.5 (6.5)	9–40	0.92	29.0 (3.6)	22.6–38.0
Efficiency ($n = 276$)	3 (3–15)	12.3 (2.1)	3.0–15.0	0.84	12.2 (1.1)	9.4–14.6

[a]Cronbach's alpha for Weiss *et al.* (Weiss *et al.*, 2002).

partnership. Data from individual items of a likert scale are regarded as ordinal data and total scale scores are usually treated as interval data [(Oppenheim, 1992), p. 156; (McDowell, 2006), p. 19]. Nunnally and Bernstein [(Nunnally and Bernstein, 1994), p. 16] argue that 'those who perform such operations thus implicitly use a scaling model to convert data from a lower (ordinal) to a higher (interval) level of measurement when they sum over items to obtain a total score'. In this study total scores are treated as interval level data.

There were no strong patterns of missing values in the data set and Little's test showed a non-significant result which means data were missing completely at random (MCAR). An overall scale score can be computed by SPSS where there is missing data and this is recommended when data are MCAR (Tabachnick and Fidell, 2007). Conservative criteria for computing scale scores were chosen, so if a respondent replied to 9 out of 10 items in a scale an overall score was computed. All statistical analyses were carried out using these total scores.

RESULTS

In total, 573 questionnaires and letters were sent to the partners in the 40 partnerships in October 2006. The number of partners in the partnerships varied from 5 to 36. Out of the 573 questionnaires sent out, the number of valid partners was 469 (104 responded to say they were no longer involved in the partnership) and 337 questionnaires were returned, giving a 72% response rate.

All regions of the country were represented, including nine partnerships with a country-wide brief. All of the partnerships were engaged in many activities to achieve their goals including training (80%), research (75%), education (65%) and health campaigns (40%). More than half (54%) were engaged in five or six different activities. In terms of partnership duration, nine of the partnerships were in existence for 1–3 years, 19 were 3–5 years old and 12 were more than 5 years in existence. The health services (37%) and voluntary sector (14%) between them accounted for more than half the partners with other sectors less well represented, for example, education (7%), local authority (6%), members of the public (3%) and the private sector (1%).

Preliminary analysis

Pearson's correlations and regression analysis were conducted on partnership-level data to test the relationships between partnership

functioning factors and partnership synergy. Analysis of variance (ANOVA) tests were used to examine the within-partnership variance in relation to the between-partnership variance for all 11 scales. The independent variable was the partnership and individual scale scores were the dependent variables. The ANOVA tests showed that the variability within partnerships was significantly less ($P < 0.0005$) than the variability between partnerships for all scales with the exception of 'organization culture'. This indicated that individual responses could be aggregated at the partnership level (Verran *et al.*, 1992; Weiss *et al.*, 2002).

The distributions of residuals for all scores were next assessed at partnership-level to ensure that the residuals had a normal distribution in relation to the predicted dependent variable scores [(Field, 2005), p. 169]. The descriptive statistics for the dependent variables were also checked to ensure that they were relatively unbounded and had sufficient variability (ibid.). Scores for partnership-level data were more bounded and less varied than partner-level data, as shown in Table 1, because they were average scores for the partnership and ranged from 23 to 35 for the Jones synergy scale and 24–39 for the Weiss *et al.* (Weiss *et al.*, 2002) synergy scale.

The intercorrelations between the predictors were then examined because the presence of multicollinearity among the predictors means they cannot be ranked in any order in the regression model even though significant factors remain significant. It is generally recommended that predictors with correlations of >0.8 should not be used together in the same regression analysis [(Tabachnick and Fidell, 2007), p. 90]. Pearson correlation coefficients for partnership-level data ranged from 0.47 to 0.86 and all were significant at the $P < 0.01$ level. These are shown in Table 2 for both synergy scales and predictor variables. 'Organization culture' is not included because the ANOVA test was insignificant.

The partnership-level values are inflated because they are derived from aggregated scores and this is usual when data are aggregated [(Hannan, 1991), p. 35]. A number of the aggregated predictors have high correlations (>0.8) with others, for example positive trust and leadership, making multicollinearity a possibility. A minimum of 10 cases of data are needed for each predictor [(Field, 2005), p.

Table 2: Pearson correlation coefficients among the hypothesized predictors and dependent variables for partnership level data ($n = 40$)

Measures	Community assets	Boundary-spanning skills	Positive trust	Mistrust	Synergy Jones	Synergy Weiss *et al.* (Weiss *et al.*, 2002)	Leadership	Administration and management	Efficiency	Power
Community assets	–									
Boundary-spanning skills	0.85	–								
Positive trust	0.77	0.76	–							
Mistrust	0.67	0.63	0.78	–						
Synergy Jones	0.73	0.70	0.86	0.59	–					
Synergy Weiss *et al.* (Weiss *et al.*, 2002)	0.79	0.77	0.85	0.66	0.82	–				
Leadership	0.80	0.77	0.84	0.66	0.86	0.82				
Administration and Management	0.74	0.72	0.79	0.57	0.72	0.81	0.81		–	
Efficiency	0.66	0.67	0.69	0.47	0.74	0.78	0.73	0.70		–
Power	0.65	0.67	0.80	0.80	0.64	0.69	0.80	0.69	0.69	

All correlations are significant at the 0.01 (two-tailed).

172], therefore two subsets of four predictors were used when carrying out the regression analysis for partnership-level data. The two subsets are (i) leadership, mistrust, power and efficiency and (ii) positive trust, boundary-spanning skills, community assets and administration and management. The rationale for choosing these subsets is that leadership and positive trust correlated very highly (0.84) and the other items in each subset correlated least highly with positive trust and leadership.

As mean scores were used to conduct the regression analysis at partnership-level and as not all means may be equally reliable, Weiss *et al.* (Weiss *et al.*, 2002) suggest that partnership scores be weighted by the inverse of the standard error of their scale means ($\sqrt{n}$/sd). This weights the partnership directly in proportion to the number of partners and inversely proportional to the standard deviations of their scale scores which indicate the level of consensus within the partnership. This gives more weight to partnerships with more reliable mean scores. Not all statisticians agree with the necessity for weights to be applied (Towey, 2008), therefore weighted and unweighted regression analyses were carried out on partnership-level data for comparison purposes. The results were the same for weighted and unweighted models.

Regression analysis

Table 3 presents the results of the unweighted regression analyses for both synergy scales separately and for the combined synergy scores.

These results show that, for partnership-level data, partnership synergy is predicted by positive trust, leadership and efficiency. Administration and management is almost significant in subset two using the Weiss *et al.* (Weiss *et al.*, 2002) scale. The same results are found regardless of which synergy scale is used although the combined scale produces a better model for both subsets.

DISCUSSION

The aim of this study was to measure partnership synergy and to identify key factors that influence synergy in health promotion partnerships. The findings are the same regardless of which synergy scale is used although the Jones and Barry (Jones and Barry, 2011) synergy scale was completed by slightly more respondents. Using both synergy scales together means a longer questionnaire so researchers will have to make a personal choice as to which they prefer to use in any future studies. There is no

Table 3: Results of regression analysis predicting partnership synergy by dimensions of partnership functioning for the Jones synergy scale, the Weiss *et al.* (Weiss *et al.*, 2002) synergy scale and the combined synergy scale scores

	Standardized β and significance level		
	Jones synergy scale	Weiss *et al.* (Weiss *et al.*, 2002) synergy scale	Combined synergy scale
Predictors: subset 1			
Leadership	0.79**	0.42*	0.63**
Mistrust	−0.00NS	0.26NS	0.14NS
Power	−0.20NS	−0.18NS	−0.20NS
Efficiency	0.30*	0.48**	0.41**
Predictors: subset 2			
Positive trust	0.72**	0.41**	0.59**
Boundary-spanning skills	0.01NS	0.12NS	0.07NS
Community assets	0.13NS	0.17NS	0.16NS
Administration and management	0.04NS	0.27 ($P = .06$)	0.17NS
Adjusted R^2 for subset 1 for Jones synergy scale = 0.75, $F = 30.4$**, df = 39			
Adjusted R^2 for Weiss *et al.* (Weiss *et al.*, 2002) synergy scale = 0.74, F = 28.15**, df = 39			
Adjusted R^2 for the combined scale = 0.82, $F = 44.08$**, df = 39			
Adjusted R^2 for subset 2 for Jones synergy scale = 0.73, $F = 27.12$**, df = 39			
Adjusted R^2 for subset 2 for Weiss *et al.* (Weiss *et al.*, 2002) = 0.77, $F = 33.14$**, df = 39			
Adjusted R^2 subset 2 for the combined scale = 0.82, $F = 46.50$**, df = 39			

All tolerance and variance inflation factors (VIF) are well within acceptable limits.
*$P < .05$.
**$P < .01$.

real advantage to using both scales and it is worth keeping in mind that the Jones and Barry (Jones and Barry, 2011) scale is more holistic as it is measuring process and product, whereas the Weiss *et al.* (Weiss *et al.*, 2002) measures only the product of a partnership.

The identification of trust as an important determinant of synergy is consistent with expert opinion [(Child and Faulkner, 1998), p. 6]. Jones (Jones, 2008, Unpublished PhD thesis) found that a majority of partners in health promotion partnerships think trust is assumed or presumed to be there and is a 'taken for granted' phenomenon. Education on the concept of trust is required by people involved in partnerships to ensure that partners understand its importance, know how to build and maintain trust, and know how to deal with mistrust when it arises in a partnership. The factor analysis shows that trust is composed of two dimensions with both positive trust and mistrust as two distinct factors and functional equivalents. This confirms that although they are interlinked (Benamati *et al.*, 2006), they each have their own distinct effects on partnership functioning. This distinction and the consequences that flow from it need to be included in any trust training.

The study findings also support the importance of leadership to synergy and are consistent with the findings of Weiss *et al.* (Weiss *et al.*, 2002). Studies have consistently identified leadership as an important partnership functioning factor (Metzger *et al.*, 2005; Hemphill *et al.*, 2006; Lempa *et al.*, 2008). Administration and management was almost a significant predictor for synergy in the present study ($P = 0.06$) and this is also consistent with findings reported by Weiss *et al.* (Weiss *et al.*, 2002). Leadership correlated highly with administration and management in the Weiss *et al.* (Weiss *et al.*, 2002) study and with trust in the present study and the regression analysis probably 'knocked out' the less important factor in both studies.

Boundary-spanning skills did not emerge as a significant predictor for synergy in the regression analysis. This may be interpreted as meaning that, while boundary-spanning skills are required to build trust, the partnership can function effectively once trust is established [(Gray, 1989), p. 166]. However, according to Sullivan and Skelcher [(Sullivan and Skelcher, 2002), p. 102], boundary spanners are required throughout the lifetime of the partnership, to ensure this trust is sustained.

Power plays a central role in partnerships and unshared power is identified in the literature review as a key obstacle to successful partnerships [(Gray, 1989), p. 122]. In this study, the power factor did not emerge as a strong predictor of synergy. This means that power may not be as important a factor when the partnerships have sufficient trust and leadership, as trusting relationships can exist only when power is shared. Weiner *et al.* (Weiner *et al.*, 2002) recommend procedural fairness as a way of building these relationships.

Organization cultures are not as big an influence on partnerships in this study, as has been described in the literature (Moss Kanter, 1994; [(Child and Faulkner, 1998), p. 110]) and findings show that the partnerships are more alike than not in relation to organization culture. One explanation for this could be the fact that more than a third of all partners are from the health sector and almost all partnerships have a number of representatives from this sector. In addition, partners that have been found to clash with the health sector, such as local authorities [(Benzeval, 2005), p. 146] and the private sector, are absent from most of the partnerships. One study that supports this theory found 'turf' issues between the private and public sectors were a major problem (Weiner and Alexander, 1998). Organization cultures brought by the partners can be a strength in terms of diversity, and a weakness when partners do not understand each other's cultures [(Child and Faulkner, 1998), pp. 87–111]. The results seem to indicate that if trust is high, organization cultures are not as problematic.

The influence of national cultures on partnership working has been well-documented by Child and Faulkner [(Child and Faulkner, 1998), p. 228]. This influence is added to that of personal identity cultures, subcultures of disciplines and organization cultures (ibid.). An aspect of national culture that might have an influence on the performance of Irish partnerships is that Ireland has experienced 20 years of social partnership agreements which involve the public sector, the private sector and civil society (Government of Ireland, 2006). Partnership working has therefore become integral to health promotion practice in the Irish health setting [(McKenna *et al.*, 2005), p. viii; Jones, 2008, Unpublished PhD thesis] and may explain why the partnerships are more alike than not in terms of the influence of organization culture.

Another finding of interest in this study is the large number (104) who had left the partnerships for a variety of reasons. This is a common problem in partnership working, people move on, get new jobs and so on. Kegler *et al.* (Kegler *et al*., 1998) had a similar problem in their study and had to delete 157 inactive partners from their sampling frame. Partners leaving the partnership has been highlighted as a major problem by Child and Faulkner [(Child and Faulkner, 1998), p. 56] and Weiner and Alexander (Weiner and Alexander, 1998), and greater efforts must be made to recruit and retain the necessary partners. Leadership (Kegler *et al*., 1998) and trust (Costa *et al*., 2001) have been associated with partner satisfaction and retention levels.

This study had a number of limitations. First, the sample of partnerships participating in the study was a convenience sample and not a random sample. Although every effort was made to encourage the involvement of partnerships that were performing less well, it was inevitable that those who participated were performing adequately to very well with fewer performing not so well. This problem introduced sampling bias into the study which was also encountered by Cummings [(Cummings, 2008), p. 37] where response bias favoured higher performing groups. The resulting restricted variance of the dependent variable makes statistical analysis more conservative. At partnership level, the mean scores of the dependent and predictor variables were bounded or constrained. This loss of variability is an inevitable consequence of using partnership mean scores, leading to inflated correlations between variables [(Hannan, 1991), p. 35] and consequent multicollinearity.

However, Tabachnik and Fidell [(Tabachnick and Fidell, 2007), p. 91] argue that 'if the only goal of analysis is prediction you can ignore it' (i.e. multicollinearity). There is another alternative whereby the exact order of the significant predictors can be established where there is multicollinearity. The partner-level data can be used as a good indicator or what is happening at partnership-level. Although this violates the 'independence of observations' rule [(Pallant, 2007), p. 203], Hannan [(Hannan, 1991), p. 35] argues that when the 'grouping process affects variation in independent and dependent variables in exactly the same way' no aggregation bias occurs. This was the case in the Jones (Jones, 2008, Unpublished PhD thesis) study so partner-level data, which did not have multicollinearity, can be used to support the findings of the present study. These findings showed that trust, followed by leadership are the most important determinants of synergy whichever scale is used.

Implications for research and practice

This study provides a clear direction for further research. First, measuring synergy does not mean that outcomes have been achieved by a partnership even if synergy levels are high. Longitudinal partnership-level research is needed to establish whether higher synergy actually leads to more outcomes for the population. Secondly, the paucity of partners from the private sector, members of the public and local authorities, is worthy of research, given their importance to partnerships that are set up to solve public health problems. Research questions could include: why so few partners from these sectors? and, if partnerships had more members from these sectors would other functioning factors, such as organization cultures, be as significant as trust and leadership? Third, a number of partnerships in this study either declined to participate in the postal survey or had become defunct within a short space of time and could not participate. It is possible that different factors may be significant in struggling or failing partnerships, and further research is needed to identify partnership functioning factors that are causing difficulty. Methods, other than a postal survey, may be required such as one-to-one interviews or observation studies.

The study has practical implications for partners in health promotion partnerships and for partnership evaluators. Partnership working is increasingly used as a way of addressing the health challenges that face society. Many workers join partnerships enthusiastically without understanding the importance of trust, leadership and other aspects of partnership functioning. Therefore, partnerships may not realise their full potential and waste public funding that could be spent on more effective health promotion interventions. Understanding synergy and key aspects of partnership functioning will help partnerships work better.

CONCLUSION

This study adds to the evidence base concerning health promotion partnership functioning and key

predictors of partnership synergy. For the first time, the relationship between a range of different functioning factors and synergy has been analysed, using valid and reliable tools, with different kinds of health promotion partnerships. The findings clearly indicate the importance of trust, leadership and efficiency to partnership synergy. Synergy is predicated on trust and leadership. Trust-building mechanisms need to be built into the partnership-forming stage and this trust needs to be sustained throughout the collaborative process. Likewise, skills in building trust and integrative leadership are critical to effective partnership functioning and training needs to be provided for partners engaged in health promotion partnerships. More explicit attention to building trust and developing integrative leadership skills in the partnership development process will contribute to maximizing synergy and enable health promotion partnerships to achieve their full potential.

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