UNIVERSITY OF BIRMINGHAM
University of Birmingham Research at Birmingham

Do Hospital Boards matter for better, safer, patient care?

Mannion, Russell; Davies, Huw; Jacobs, Rowena; Kasteridis, Panos; Millar, Ross; Freeman, Tim

DOI:
10.1016/j.socscimed.2017.01.045

License:
Creative Commons: Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (Harvard):
Mannion, R, Davies, H, Jacobs, R, Kasteridis, P, Millar, R & Freeman, T 2017, 'Do Hospital Boards matter for better, safer, patient care?', *Social Science & Medicine*, vol. 177, pp. 278-287. https://doi.org/10.1016/j.socscimed.2017.01.045

Link to publication on Research at Birmingham portal

General rights
Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

•Users may freely distribute the URL that is used to identify this publication.
•Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
•User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
•Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy
While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

Download date: 23. Apr. 2024

Social Science & Medicine 177 (2017) 278–287

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Do Hospital Boards matter for better, safer, patient care?

R. Mannion [a, *], H.T.O. Davies [b], R. Jacobs [c], P. Kasteridis [c], R. Millar [a], T. Freeman [d]

[a] University of Birmingham, United Kingdom
[b] University of St Andrews, United Kingdom
[c] University of York, United Kingdom
[d] University of Middlesex, United Kingdom

ARTICLE INFO

Article history:
Received 9 December 2015
Received in revised form
9 May 2016
Accepted 22 January 2017
Available online 24 January 2017

Keywords:
Hospital Boards
Board governance
Patient safety
Healthcare quality
Board competencies

ABSTRACT

Manifest failings in healthcare quality and safety in many countries have focused attention on the role of hospital Boards. While a growing literature has drawn attention to the potential impacts of Board composition and Board processes, little work has yet been carried out to examine the influence of Board competencies. In this work, we first validate the structure of an established 'Board competencies' self-assessment instrument in the English NHS (the Board Self-Assessment Questionnaire, or BSAQ). This tool is then used to explore in English acute hospitals the relationships between (a) Board competencies and staff perceptions about how well their organisation deals with quality and safety issues; and (b) Board competencies and a raft of patient safety and quality measures at organisation level.

National survey data from 95 hospitals (334 Board members) confirmed the factor structure of the BSAQ, validating it for use in the English NHS. Moreover, better Board competencies were correlated in consistent ways with beneficial staff attitudes to the reporting and handling of quality and safety issues (using routinely collected data from the NHS National Staff Survey). However, relationships between Board competencies and aggregate outcomes for a variety of quality and safety measures showed largely inconsistent and non-significant relationships.

Overall, these data suggest that Boards may be able to impact on important staff perceptions. Further work is required to unpack the impact of Board attributes on organisational aggregate outcomes.
Crown Copyright © 2017 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Recent scandals related to poor standards of hospital care have focused policy attention on the governance and leadership provided by hospital Boards (Francis, 2013; Mannion et al., 2016). In particular, there has been concern to assess and strengthen how governing bodies can provide more effective oversight of the quality and safety of the care that their hospitals provide. A recent review (Millar et al., 2013) demonstrated increasing research attention being paid to Boards (locating 122 papers for detailed review), noting that clear differences were emerging between high- and low-performing hospitals in terms of Board composition and processes (Jha and Epstein, 2010; Jiang et al., 2009). And recent empirical work combining data sets from across the US and the UK has argued that effective hospital Boards are associated with specific management practices seen as helpful to improving the quality of care delivered by those hospitals (Tsai et al., 2015). It is to this literature that we seek to make a contribution.

First, while earlier review work (Millar et al., 2013) highlighted the research attention being paid to Boards, it also exposed the paucity of studies that have focused specifically on quality and safety (as compared to broader measures of performance, including financial performance in US studies especially). Second, relatively few studies have explored Board *competencies*, focusing instead on the make-up of the Board (for example, looking at size, composition and the concentration of clinical expertise) and/or examining the processes through which Boards operate. Finally, extant empirical studies have largely been under-theorised, leaving unspecified the pathways or mechanisms through which Boards impact on patient care. This study focuses attention on these research gaps by exploring the relationships between (self-assessed) Board competencies and a raft of patient safety and quality of care measures. To enable these analytic tasks, we needed first to validate the data structure of the leading Board assessment tool – the Board Self-Assessment Questionnaire (BSAQ).

* Corresponding author. Health Services Management Centre, Park House, University of Birmingham, Edgbaston, Birmingham, B15 2RT, United Kingdom.
E-mail address: r.mannion@bham.ac.uk (R. Mannion).

http://dx.doi.org/10.1016/j.socscimed.2017.01.045
0277-9536/Crown Copyright © 2017 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1.1. Theories of board governance and behaviour

A range of competing theories and conceptual framings have been used to research and understand the governance role of Boards (Chambers et al., 2013; Mannion et al., 2016). Below we outline six relevant framings, eliciting insights from these for hospital Board oversight of quality and patient safety.

Agency theory examines reciprocal (but nonetheless asymmetric) relationships within organisations. It is premised on the assumption that, unless monitored, health care professionals will seek to pursue their own interests rather than meet broader organisational objectives. Here the hospital Board is cast as an instrument for monitoring and holding employees to account for their actions and performance.

Stewardship theory in contrast recognises that employees are not motivated purely by self-interest, and argues instead that employees often seek to contribute towards the attainment of broader organisational goals, and so can be trusted to serve as effective stewards of an organisation's resources. In this view, the role of the Board with regard to the oversight of quality and safety centres on nurturing an appropriate supportive culture of shared values and shared goals, and there is less emphasis on developing strategies for monitoring, incentivising or coercing performance.

Stakeholder theory elaborates the notion that health care organisations comprise a range of overlapping interests, both competing and cooperative, and the emphasis is on how different stakeholder interests can be addressed, integrated and balanced. The role of the Board, then, is to interpret and represent the views of all those with a stake in ensuring the delivery of good quality care, and to make difficult trade-offs between different stakeholders including staff, regulators, patients and the public.

Resource dependency theory was originally developed within the strategic management literature. From this perspective, the organisation is perceived as a repository of tangible and intangible assets and dynamic capabilities, with the board contributing human capital (specialised expertise, experience and knowledge) and relational capital (networks and linkages to external resources and stakeholders) (Hillman and Dalziel, 2003; Brown, 2005). The key function of the Board then is to effectively manage internal and external relationships so as to leverage influence and resources. Board members are therefore expected to use their skills and contacts to act as 'boundary spanners' with key partners as a means of acquiring resource, expertise and strategic advantage.

Group decision process theories focus on how information is processed and managed in Boards, the ways in which information influences group decisions, and the group decision-making dynamics that underlie those decisions (Brown, 2005). Such theories may encompass procedural aspects (e.g. how information is processed and presented), cognitive aspects (the skills and interpretative work required to make sense of data) and social aspects (e.g. how a multiplicity of voices are accommodated into complex decision making).

Finally, *performative and symbolic* framings focus on the importance of the symbolic and ceremonial value of Boards, and explore Board *performances* in a dramaturgical sense (Freeman et al., 2016). Such approaches are based on the assumption that Boards undertake important conditioning work outside of formal Board meetings. So understanding Board governance requires consideration of (for example): the *staging* of Board meetings in terms of deliberate attempts to organise the interaction between participants by drawing on existing symbols; the *scripting* expected of actors involved in debates and decision-making.

None of these framings of governance, by itself, captures the full range and richness of hospital Board governance, although agency-theory is the dominant model (explicitly or implicitly) that underpins most empirical work (Millar et al., 2013). Each framing draws attention to some key aspects of the dynamics, while neglecting others. We do not suggest that any of the perspectives provides a more or less 'true' account, but note instead that each has the potential to contribute insights as we begin to tease out the empirical relationships between organisation Boards and organisational performance(s). Embedded within each of these framings are issues of Board *competence* (i.e. how can Boards achieve key goals within any given framing?), an issue to which we shall return shortly.

Whatever their relative merits, each of these framings points to the importance of unravelling what Boards do and the mechanisms through which Board actions link to organisational outcomes. A particular focus in this paper then lies in first surfacing issues of Board competence as a relevant place to look for distinguishing patterns between Boards, and then exploring the mediating role of staff perceptions in translating Board actions into organisational performance.

1.2. Empirical evidence of board effectiveness

There is a small but growing body of work exploring the relationship between Board composition and/or Board practices and factors related to the quality of care, although this is relatively under-theorised (Millar et al., 2013). With regards to Board *composition*, research in the United States (US) suggests that clinical expertise on Boards is associated with better performance along a range of dimensions (Jiang et al., 2009). Similarly, research in the English NHS exploring the composition of hospital Trust Boards also concluded that those Boards with a high proportion of doctors performed best in terms of healthcare quality (Veronesi et al., 2013). With regard to Board *practices*, (Botje et al., 2014) in the largest study of its kind (covering 210 hospitals across seven European countries) found a positive association between having clinical quality as an item on the hospital Board agenda and the propensity of hospitals to engage in quality improvement activity. Similar work in the US explored the relationship between Board engagement in quality and clinical outcomes, finding large differences in reported Board activities (Jha and Epstein, 2010) – with 'high performing' hospitals being significantly more likely to report structural and procedural characteristics such as quality subcommittees, Board training and use of quality data.

Taken together, these findings begin to suggest the importance of Boards for the delivery of high quality care, but they do not yet clarify the key mechanisms through which Boards have effect on which kinds of outcome. Moreover, the focus on Board composition and Board practices (while important) leaves relatively unexplored an examination of what Board *competencies* support appropriate Board processes. All of these observations contribute to the framing of our research questions.

1.3. A focus on board competencies

The notion of 'competence is derived from the Latin verb 'competere', meaning 'to be suitable' (Nordhaung, 1993). Competencies can be defined as an individual's underlying capabilities to perform specified tasks effectively, including: relevant expertise and experience; cognitive capabilities and analytical skills; and the underpinning values relevant to effective working (Boyatzis, 2008). Competencies, then, are inherently contextual to the task and goals at hand. In relation to Board work in hospitals, ideas of competence

relate to the knowledge, expertise and qualifications that are required to enable board members to perform their roles effectively in the light of various governance framings (Yusoff and Armstrong, 2012; Brown, 2005).

Careful inductive work in the United States exploring the characteristics of effective non-profit Boards (including hospitals) identified six dimensions of Board competencies, from which a 65-item assessment tool was developed (Chait et al., 1991, 1993). This tool, the Board Self-Assessment Questionnaire (BSAQ) conceived of competencies in six dimensions as follows:

1. **Contextual dimension.** The board understands and takes into account the culture, values and norms of the organisation it governs [12 items].
2. **Educational dimension.** The board takes the necessary steps to ensure that all board members are well-informed about the organisation and the professions working there as well as the board's own roles, responsibilities and performance [12 items].
3. **Interpersonal dimension.** The board nurtures the development of board members as a group, attends to the board's collective welfare, and fosters a sense of cohesiveness [11 items].
4. **Analytical dimension.** The board recognises complexities and subtleties in the issues it faces and draws upon multiple perspectives to dissect complex problems and to synthesise appropriate responses [10 items].
5. **Political dimension.** The board accepts as one of its primary responsibilities the need to develop and maintain healthy relationships among key stakeholders [8 items].
6. **Strategic dimension.** The board helps envision and shape institutional direction and helps ensure a strategic approach to the organisation's future [12 items].

More recent work exploring the competence of Boards (Brown, 2005) showed how different theoretical framings were more or less associated with the different dimensions of Board competence identified by Chait and colleagues (1991; 1993). For example, Agency theory approaches were mapped to the Contextual dimension; Resource Dependency views were mapped to the Political and Strategic dimensions; and Group Decision Process theories were linked to the Analytic, Educational and Interpersonal dimensions (Brown, 2005). This work opens up new possibilities for surfacing an understanding of competencies within different theoretical framings, and for a more detailed examination of how such competencies may impact organisationally. Before we can do this however, we need to be reassured that the tool to assess these dimensions of competence is valid in the UK hospital setting.

The 65-item BSAQ provides scores on each of the six dimensions and also allows the creation of an overall score. The individual items are rated by respondents on a 4-point Likert scale (strongly disagree, disagree, agree or strongly agree), with each of the items corresponding to one of the six dimensions of Board performance. Since its development, BSAQ has undergone extensive analysis of reliability, validity, and sensitivity (Holland, 1991; Jackson and Holland, 1998). It has also been used to assess board effectiveness in non-profit US hospitals (McDonagh, 2006) and in one small study of UK NHS trusts (Emslie, 2007). However, as the current study is the first major piece of empirical work using BSAQ in the UK context, we first of all tested the data structure of the instrument in this new setting. Only having done this do we then use the BSAQ tool to explore Boards' impacts on organisational outcomes and mediating variables.

1.4. Research questions

The research questions posed then are as follows:

- Can the data structure of an internationally available Board self-assessment instrument (the BSAQ) be validated for use in the English NHS?
- What are the empirical relationships between Board's self-assessed competencies and how staff across that organisation think and feel about their organisation's arrangements for addressing patient safety?
- What are the empirical relationships between Board's self-assessed competencies and the organisation's aggregate outcomes on patient safety and quality related measures?

2. Methods

2.1. Methodological overview

This study draws on large-scale quantitative datasets (both routinely collected and newly gathered) to explore the research questions set out above. Our unit of analysis is acute-care hospital organisations in the English NHS (NHS Trusts). It should be noted that a single acute-care *organisation* (NHS Trust) might incorporate several distinct *hospitals* spread across multiple geographic sites. For this reason, care was taken to ensure that all data used related to the NHS Trust and not to a specific provider site (such as a single hospital).

Data were sourced as follows (with the specific variables utilised or created from these datasets being itemised and explained in the Results section):

- **Board data:** Data on what Boards' competence were collected *de novo* from a national (England-wide) on-line survey of acute NHS Trusts, using a standardized instrument, the Board Self-Assessment Questionnaire (BSAQ). This instrument, and the variables derived from it, are described subsequently.

The on-line survey of board members was conducted over two periods: May–August 2012 and February–April 2013. A total of 334 responses were received from 165 executive and 169 non-executive board members, giving at least one response from two-thirds of the acute NHS trusts then in existence (66%; 95/144). Overall the survey gathered responses from an average of 3.6 board members per hospital organisation included ($n = 95$), and multiple responses from the same Board are aggregated.

- **Staff data:** Data on how staff across any given hospital organisation think and feel about their organisation's ability to address patient safety were collated from the annual National Staff Survey (NSS) run in the NHS in 2012. Questions were drawn from the section of the survey on errors, near misses and incidents.
- **Organisational outcomes:** The data on aggregate organisation outcomes on patient safety (and related measures) are part of datasets routinely collected and shared by the Department of Health (London) and further collated and augmented by the Centre for Health Economics at the University of York.

The analytical strategy used to investigate the research questions involved estimating multivariate models regressing aggregate measures of staff perceptions and aggregate measures of patient safety on the total BSAQ score (controlling for a number of hospital level characteristics). The detailed analytic techniques deployed are explained alongside the results of those analyses in the main part of the paper.

3. Results

3.1. Board descriptions: board size, and attention to quality and safety

The smallest Board in our sample had eight members, and most Boards (93%) were between ten and fifteen in size. The Boards appeared to give considerable time to safety and quality issues: only a fifth of boards (21%) reported that less than 30% of their time was spent discussing safety and quality issues, and a quarter (26%) reported that more than 60% of time was spent on these issues. In general, very high level of desirable characteristics (such as formal processes to support safety and quality, explicit and measurable goals, and participation in formal training) were being reported by Boards (Mannion et al., 2015, 2016).

3.2. Boards' self-reported assessments of competencies through BSAQ

Using BSAQ, we saw overall high levels of reported competencies, but some significant variations between individual Trusts (Table 1). These data are calculated as follows: all the items in BSAQ are measured on a four-point Likert scale, so the maximum for any (unstandardized) responses varies across the six dimensions of the scale depending on the number of items in any given dimension. For example, scores range from 12 to 48 for the 12 items in the contextual, educational and strategic dimensions, but from 11 to 44 across the 11 items that make up the interpersonal dimension, and from eight to 32 for the eight items in the political dimension. The sums of individuals' responses from the same Trust were averaged to produce Trust-based aggregates for each of the six BSAQ dimensions as well as a total BSAQ score. Averages across all Trusts are presented in Table 1 and show generally high or very high levels of agreement with desirable statements of competency in each of the six dimensions, with no differences by Foundation/non-Foundation Trust status, or by teaching hospital/non-teaching hospital status. In each dimension, however, there remains room for improvement in BSAQ scores, and that headroom varies markedly between individual Trusts.

The descriptive data from BSAQ and other measures (Mannion et al., 2015) show largely high levels of reporting of desirable characteristics by Boards, but the variability between organisations provides an opportunity to ask *does this matter?* Before addressing this question, however, an essential first task was to understand the data structure of the BSAQ tool in this new context (acute hospitals in the English NHS) prior to its use in further analytic work.

3.3. Testing the structure of BSAQ: factor analysis

Factor analysis provides a way of exploring the internal structure of the data gathered, and assumes that the variance in a given item can be explained by one or more common underlying factors and by variance that is unique to the item. The amount of variation in the item that is due to the common factors is known as communality (Comrey and Lee, 1992).

Our first task then is to establish if each of the established BSAQ dimensions are indeed unidimensional. This process, known as factor extraction, is iterative: first, the squared multiple correlation for each item (a measure of how much variance an item shares with the other items) is initially placed on the diagonal of the correlation matrix to approximate communalities. Then factors are extracted successively with the first factor accounting for the maximum amount of common variance. The second factor is extracted from the residual correlation matrix after factoring out the influence of the first factor and the process continues until some criteria are met.

In factor analysis, eigenvalues represent the amount of common variance among all items that is explained by a particular factor. The larger the eigenvalue, the more total common variance in the items is explained by the factor. Table 2 presents six sets of eigenvalues obtained from factor analysis performed in each of the six BSAQ dimensions. In the first dimension, the contextual dimension, there are six negative eigenvalues (which are not acceptable in factor analysis) and therefore only factors 1–6 are further examined for this dimension. Similarly, with the other dimensions: only the positive factors are examined (4–6 in each case).

The amount of common variation explained by the first factor in the contextual dimension is 3.30, significantly larger than the variance explained by the other factors. A similar pattern holds true for the other five dimensions, where in each case the first eigenvalue is notably larger than all of the others (Table 2). Indeed, Scree plots (Cattell, 1966) in all cases show distinct breaks between the slope of the larger eigenvalue (which corresponds to the first factor) and the trailing off of the other eigenvalues suggesting the use of a single factor in each dimension. Fig. 1 shows the scree plot for the

Table 2
Eigenvalues from factor analysis (all 6 BSAQ dimensions).

	contextual	Educational	interpersonal	analytical	political	strategic
1	3.30	2.99	2.37	2.72	2.47	4.58
2	0.58	0.59	0.45	0.30	0.22	0.53
3	0.29	0.26	0.24	0.24	0.10	0.26
4	0.11	0.20	0.13	0.11	0.07	0.11
5	0.07	0.04	0.04	0.03	−0.03	0.06
6	0.02	0.00	−0.05	−0.04	−0.04	0.02
7	−0.02	−0.03	−0.09	−0.08	−0.13	−0.06
8	−0.13	−0.11	−0.13	−0.14	−0.19	−0.08
9	−0.15	−0.17	−0.17	−0.19		−0.11
10	−0.17	−0.20	−0.19	−0.23		−0.23
11	−0.26	−0.27	−0.22			−0.24
12	−0.33	−0.31				−0.27

Table 1
Average (over Trusts) sum of responses for each dimension by foundation and teaching status.

Variable	Max points	Foundation			Teaching		
		No (N = 42)	Yes (N = 51)	Diff	No (N = 66)	Yes (N = 27)	Diff
Contextual	48	36.13 (28–47)	36.91 (29–43)	−0.77	36.32 (28–43)	37.13 (29–47)	−0.81
Educational	48	36.49 (29–43)	37.18 (29–45)	−0.69	36.87 (29–45)	36.87 (29–43)	0.00
Interpersonal	44	32.05 (23–41)	32.53 (26–39)	−0.47	32.00 (26–39)	33.08 (23–41)	−1.08
Analytical	40	29.81 (24–34)	30.14 (24–38)	−0.33	29.99 (24–38)	29.99 (24–36)	0.00
Political	32	24.65 (20–29)	25.02 (20–31)	−0.36	24.84 (20–31)	24.88 (20–28)	−0.04
Strategic	48	36.50 (29–45)	37.11 (25–45)	−0.62	36.78 (25–45)	36.96 (29–45)	−0.18
BSAQ	260	195.63 (159–230)	198.87 (167–235)	−3.24	196.80 (159–235)	198.91 (162–230)	−2.11

*none of the differences are statistically significant.
**in parenthesis the minimum and maximum sum of responses.

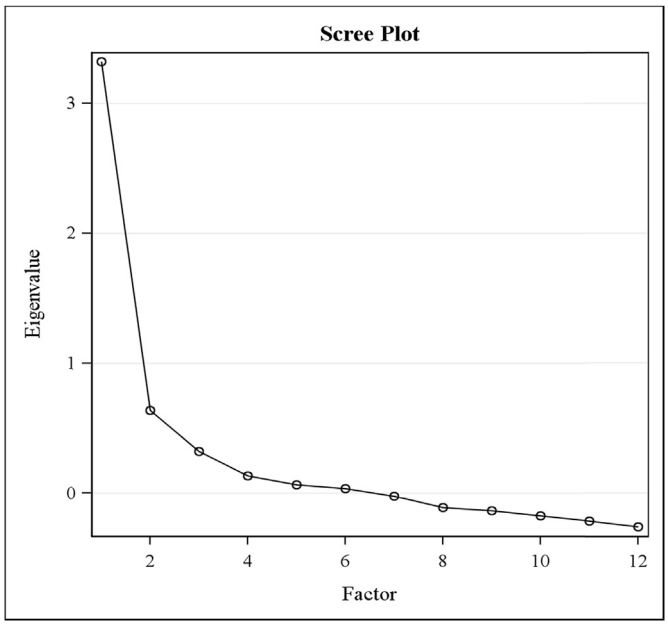

Fig. 1. Sample scree plot for the 12 items of the contextual scale.

contextual scale as an example.

In further corroboration, one common criterion to determine the end of the extraction process is to select only those factors for which the eigenvalues are greater than one (Kaiser-Guttman), and in all six dimensions, only the first factor meets this condition. The percent of variance extracted by the first factor exceeds 85% in all six dimensions (much higher than commonly used thresholds in social sciences).

The results of this initial testing then – the confirmation of a single factor for each of the pre-determined six BSAQ dimensions – supports the validity of the established dimensional structure of the BSAQ in the English NHS. This structure has been demonstrated in previous studies in the US – in healthcare and in the voluntary sector (Holland, 1991; Holland and Jackson, 1998; Jackson and Holland, 1998; McDonagh, 2006) – but the validation of the BSAQ structure with UK health service data is novel.

3.4. Contribution of items to the common factor

Each of the dimensions in BSAQ has a number of items that load onto that dimension, for example there are 12 items in the contextual domain, but only eight items in the political domain. The factor loadings presented in Table 3 indicate the extent to which each of the items correlate with the underlying factor. The square of an item's loading represents the item's communality. In all 6 dimensions, items load reasonably strongly, exceeding the commonly used threshold of 0.3 for item loadings with only two exceptions (contextual item 11, and interpersonal item 2); indeed, about two-thirds of the items (41/65) load higher at >0.5.

This suggests that all of the items that underpin each of the six dimensions of the BSAQ are valid and pick up important aspects that explain the underlying variability on each of the BSAQ dimensions e.g. the statement for item 11 under the strategic domain is 'This Board makes explicit use of the long range priorities of this organisation in dealing with current issues' and this has an item loading of 0.69 (Table 3) suggesting it is an important question to help detect Board competency on strategic direction.

3.5. Checking for robustness

Factor analysis applied to ordinal data (as above) can be criticised for using Pearson's correlations and therefore relying on the assumption that the variables are continuous and follow a multivariate normal distribution. An alternative approach might be to perform factor analysis on the matrix of polychoric correlations, which can be thought of as correlations between unobserved continuous variables that represent crudely the ordinal variables. In carrying out such an analysis (available from the authors) again one common factor emerges, and the differences in loadings compared to conventional factor analysis are small.

Overall then this analysis supports and replicates the original six-factor structure of the BSAQ and provides reasonable grounds for using these dimensions with English NHS Boards.

3.6. Creating a total BSAQ score

To develop a composite BSAQ score for all 65 items we performed factor analysis on the factor scores representing the six BSAQ dimensions. One single factor emerges and Table 4 shows the

Table 4
BSAQ-dimensions loadings on the common factor.

	Loadings (squared loadings)	
Contextual	0.82	0.67
Educational	0.72	0.52
Interpersonal	0.79	0.62
Analytical	0.82	0.68
Political	0.76	0.58
Strategic	0.81	0.66

Table 3
Item loadings on the common factor for the 6 BSAQ dimensions – Factor analysis.

	contextual		educational		Interpersonal		Analytical		Political		Strategic	
	loadings	squared	loadings	squared	loadings	squared	loadings	squared	loadings	squared	loadings	squared
item1	0.51	0.26	0.53	0.28	0.48	0.23	0.56	0.31	0.48	0.23	0.69	0.48
item2	0.65	0.42	0.58	0.34	0.18	0.03	0.54	0.29	0.50	0.25	0.56	0.31
item3	0.58	0.34	0.54	0.29	0.55	0.31	0.56	0.31	0.47	0.22	0.60	0.36
item4	0.43	0.19	0.45	0.20	0.40	0.16	0.63	0.40	0.69	0.47	0.77	0.59
item5	0.52	0.28	0.33	0.11	0.58	0.34	0.40	0.16	0.60	0.35	0.48	0.23
item6	0.57	0.33	0.38	0.15	0.39	0.15	0.37	0.14	0.66	0.43	0.56	0.32
item7	0.56	0.32	0.59	0.35	0.47	0.22	0.68	0.47	0.60	0.36	0.66	0.43
item8	0.55	0.30	0.51	0.26	0.52	0.27	0.37	0.13	0.39	0.16	0.66	0.43
item9	0.58	0.33	0.62	0.39	0.55	0.30	0.53	0.28			0.48	0.23
item10	0.43	0.19	0.38	0.14	0.41	0.17	0.47	0.22			0.60	0.36
item11	0.26	0.07	0.35	0.13	0.43	0.19					0.69	0.48
item12	0.54	0.29	0.60	0.36							0.61	0.37

factor loadings. All dimensions load very strongly on the common underlying factor, providing a clear justification for use of the overall BSAQ score in future analyses. For example, about 67% of the common variance that the contextual dimension shares with the other five BSAQ dimensions is explained by the common factor.

3.7. Relationships between BSAQ and staff perceptions on addressing safety

Having validated BSAQ in this context, our next task was to explore the potential relationships between Board-level orientations (as measured through BSAQ) and wider staff perceptions on patient safety and error handling (as measured through the National Staff Survey).

The NHS National Staff Survey assesses a wide range of staff perceptions using either a 5-point Likert-type scale (from strongly agree to strongly disagree) or a simple yes/no response. From the broader data set we selected those items that related directly to perceptions of the organisation's ability to address patient safety, such as how the organisation handles errors, near misses, and incidents (see list below). The variables computed are the proportions of NHS staff respondents in a given organisation who 'agree' or 'strongly agree' to the following nine statements (in parenthesis following each statement we note the variable shorthand as used in subsequent tables).

1. My organisation treats staff who are involved in an error, near miss, or incident fairly ['treat fair'; 5-point Likert]
2. My organisation encourages us to report errors, near misses or incidents ['report'; 5-point Likert]
3. My organisation blames or punishes people who are involved in errors near misses or incidents ['blame'; 5-point Likert]
4. When errors, near misses, or incidents are reported, my organisation takes action to ensure that they do not happen again ['action'; 5-point Likert]
5. Would you feel safe raising your concern? ['safe'; yes/no]
6. Would you be confident that your organisation would address your concern? ['confident'; yes/no]
7. My organisation treats reports of errors, near misses or incidents confidentially ['confidential'; 5-point Likert]
8. We are informed about errors, near misses and incidents that happen in this organisation ['inform'; 5-point Likert]
9. We are given feedback about changes made in response to reported errors, near misses and incidents ['feedback'; 5-point Likert]

It is clear that for all of these measures *except one* a high level of agreement is desirable for an organisation that takes safer care seriously. Overall, average levels of agreement with the eight *desirable* organisational characteristics were only modest (Table 5: the overall average across all organisations across these eight items was 59% in agreement). While 86% of staff (on average across all organisations) agreed that they were encouraged to report errors, near misses or incidents, and 72% said that they would feel safe doing so, for the remaining six measures agreement largely lay within the range 40–60% (Table 5). As expected, the single measure of a *lack* of confidence in the organisational arrangements – the extent to which the organisation is thought to blame or punish people for errors or incidents – scored relatively low, with a mean of 13% and a range across organisations of 7–20% (Table 5).

Table 5
Measures of the organisation's ability to address safety.

Variable	Mean	Std Dev	Minimum	Maximum
Treat fair	47.88	5.68	33.77	59.70
Report	86.16	3.16	75.83	91.46
Blame	13.18	3.02	7.47	20.39
Action	61.96	5.82	46.08	74.08
Safe	71.79	3.94	62.22	78.97
Confident	55.23	5.67	40.91	67.76
Confidential	63.22	4.97	51.33	70.79
Inform	42.51	6.65	28.54	63.97
Feedback	42.10	6.17	29.81	61.25

Having seen considerable variation between organisations on the extent to which staff are confident that their organisation will respond appropriately to safety and quality concerns, we now seek to explain some of this variation by the Board orientations as measured by BSAQ. Each of these staff perception variables is regressed on a set of organisational variables including the total BSAQ score, Foundation Trust status, and three dummy variables indicating hospital size (small, medium, large). The reference category is acute teaching hospital. Regression results are presented in Table 6A-C.

Across Table 6A-C we can see that BSAQ emerges as positively and significantly associated with the variables that assess whether staff would *feel safe* raising concerns and *be confident* that their concerns would be addressed. More broadly however, the pattern across the other six desirable organisational characteristics, while not reaching statistical significance, shows consistently positive regression coefficients – as would be expected if Board activities can positively influence staff perceptions around quality and safety. Moreover, the single *undesirable* organisational measure in this set (perceptions of *blame*) exhibits a *negative* coefficient (albeit non-significant), adding to the picture of consistency.

Table 6
A-C: Regressions of various staff perception variables on BSAQ and other organisational variables.

Table 6A: Staff perceptions on treat fair, report and blame

	Treat fair		Report		Blame	
intercept	49.03***	(1.67)	84.97***	(0.93)	13.72***	(0.85)
BSAQ score	1.19	(0.80)	0.64	(0.45)	−0.55	(0.41)
foundation	0.68	(1.20)	1.10	(0.67)	−0.26	(0.61)
Respondents/board	1.17	(2.98)	2.22	(1.67)	0.24	(1.53)
small	−2.37	(1.82)	0.33	(1.02)	−1.08	(0.93)
medium	−0.96	(1.65)	0.22	(0.92)	−0.09	(0.84)
large	−4.22**	(1.75)	−1.55	(0.98)	−0.13	(0.90)
R2	0.11		0.14		0.005	

Table 6B: Staff perceptions on action, safe and confident

	Action		Safe		Confident	
intercept	60.66***	(1.66)	71.64***	(1.14)	51.74***	(1.59)
BSAQ score	0.95	(0.79)	1.26**	(0.55)	1.41*	(0.76)
foundation	2.53**	(1.19)	0.50	(0.82)	3.14***	(1.14)
Respondents/board	3.76	(2.97)	−0.23	(2.04)	5.14*	(2.84)
small	−1.72	(1.81)	0.29	(1.25)	0.27	(1.73)
medium	−0.99	(1.64)	0.14	(1.13)	0.44	(1.57)
large	−3.04*	(1.74)	−0.60	(1.20)	−1.62	(1.67)
R2	0.13		0.08		0.18	

Table 6C: Staff perceptions on confidential, inform and feedback

	Confidential		Inform		Feedback	
intercept	63.48***	(1.42)	43.59***	(1.92)	42.96***	(1.80)
BSAQ score	0.74	(0.68)	0.34	(0.92)	0.97	(0.86)
foundation	1.17**	(1.02)	3.10**	(1.38)	2.29*	(1.29)
Respondents/board	1.23	(2.54)	1.25	(3.44)	0.91	(3.23)
small	−1.93	(1.55)	−3.98*	(2.10)	−3.25	(1.97)
medium	−0.65	(1.41)	−3.64*	(1.90)	−1.77	(1.79)
large	−2.92*	(1.49)	−4.57**	(2.02)	−4.03**	(1.90)
R2	0.10		0.13		0.12	

Standard errors in parentheses. * $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$.

As noted above (and seen in Table 6B), total BSAQ score (i.e. better Board competencies) showed positive and significant relationships with both the proportion of staff feeling safe to raise concerns and the proportion feeling confident that their organisation would address their concerns. For these two variables then we ran further regressions on the factor scores representing the six BSAQ dimensions to explore which aspects of BSAQ specifically were correlated with staff's ability to raise concerns over patient safety.

Table 7A and B shows results for the six BSAQ dimension against staff feeling 'safe' to raise concerns, while Table 8A and B shows the regressions for the six BSAQ dimensions against staff feeling 'confident' that their organisation would address their concern.

Results are positive and significant for staff feeling 'safe' in the contextual, analytical, political and strategic domains. The effect is strongest in the contextual dimension, which focuses on the Board taking cognisance of the organisation's values and norms: for example, the Board may support a more open and transparent culture around whistle-blowing, enabling staff to feel safe to raise concerns.

Results are positive and significant for staff feeling 'confident' in the contextual and strategic dimensions, suggesting that a focus on the organisational values and institutional direction give staff a sense of security and assurance that patient safety concerns will be dealt with.

Overall then these data reveal some intriguing relationships between BSAQ scores at Board level and aggregate measures of staff perceptions around their organisation's ability to deal fairly and effectively with errors, near-misses and safety issues. All of the empirical relationships are patterned as would be expected if positive Board activities impacted positively on staff perceptions, and this was true of the eight measures of desirable perceptions and the single measure of undesirable perceptions. While only two of these relationships reached statistical significance, the overall patterning is of interest. Taking the two significant measures (safe to report, and confident that actions will ensue) and then drilling down into the specific dimensions of BSAQ that correlate suggests those aspects of Board performance that might be most important at influencing these staff perceptions (see above).

Table 7
A and B: BSAQ dimensions and their relationships with 'feel safe to report'.

Table 7A: Feeling 'safe to report' and BSAQ dimensions contextual, educational and interpersonal

	Contextual		Educational		Interpersonal	
intercept	71.41***	(1.13)	71.65***	(1.17)	71.47***	(1.16)
BSAQ score	1.52***	(0.57)	0.68	(0.60)	0.94	(0.58)
foundation	0.48	(0.81)	0.63	(0.84)	0.61	(0.83)
Respondents/board	0.37	(2.02)	0.02	(2.09)	0.04	(2.07)
small	0.22	(1.23)	0.26	(1.28)	0.32	(1.27)
medium	0.13	(1.12)	−0.24	(1.14)	0.12	(1.16)
large	−0.54	(1.19)	−0.85	(1.22)	−0.61	(1.22)
R2	0.10		0.04		0.05	

Table 7B: Feeling 'safe to report' and BSAQ dimensions analytical, political and strategic

	Analytical		Political		Strategic	
intercept	71.67***	(1.15)	71.78***	(1.15)	71.72***	(1.16)
BSAQ score	1.32**	(0.63)	1.42**	(0.66)	0.98*	(0.55)
foundation	0.57	(0.82)	0.48	(0.82)	0.63	(0.82)
Respondents/board	−0.23	(2.06)	−0.50	(2.07)	−0.39	(2.09)
small	0.19	(1.25)	0.24	(1.25)	0.25	(1.26)
medium	0.07	(1.13)	0.25	(1.15)	−0.09	(1.14)
large	−0.64	(1.21)	−0.78	(1.20)	−0.63	(1.22)
R2	0.07		0.07		0.06	

Standard errors in parentheses. * P ≤ 0.05; ** P ≤ 0.01; *** P ≤ 0.001.

Table 8
A and B: BSAQ dimensions and their relationships with 'confident that concerns will be addressed'.

Table 8A: Feeling 'confident that concerns will be addressed' and BSAQ dimensions contextual, educational and interpersonal

	Contextual		Educational		Interpersonal	
intercept	51.45***	(1.56)	51.59***	(1.62)	51.53***	(1.60)
BSAQ score	2.03**	(0.79)	−0.22	(0.83)	1.23	(0.80)
foundation	3.07***	(1.12)	3.45***	(1.16)	3.23***	(1.14)
Respondents/board	5.85**	(2.79)	5.59*	(2.89)	5.41*	(2.85)
small	0.19	(1.70)	0.08	(1.77)	0.33	(1.75)
medium	0.51	(1.54)	0.03	(1.59)	0.49	(1.59)
large	−1.49	(1.64)	−1.86*	(1.70)	−1.59*	(1.68)
R2	0.21		0.15		0.18	

Table 8B: Feeling 'confident that concerns will be addressed' and BSAQ dimensions analytical, political and strategic

	Analytical		Political		Strategic	
intercept	51.75***	(1.60)	51.83***	(1.61)	51.90***	(1.59)
BSAQ score	1.36	(0.87)	1.18	(0.92)	1.53**	(0.76)
foundation	3.23***	(1.14)	3.20***	(1.15)	3.24***	(1.13)
Respondents/board	5.17*	(2.86)	5.02*	(2.89)	4.71	(2.85)
small	0.15	(1.74)	0.18	(1.75)	0.26	(1.73)
medium	0.34	(1.58)	0.43	(1.60)	0.25	(1.55)
large	−1.67*	(1.68)	−1.83*	(1.68)	−1.56*	(1.67)
R2	0.18		0.17		0.19	

Standard errors in parentheses. * P ≤ 0.05; ** P ≤ 0.01; *** P ≤ 0.001.

3.8. Relationships between BSAQ and aggregate organisational performance

The preceding analysis suggests that Board performance may have consequences for wider staff perceptions around how safety and quality are addressed; we now turn to examining whether Board performance is also reflected in the delivery of important quality and safety outcomes. Table 9 displays 13 key quality and safety outcome or process measures that were available in aggregate form for the 95 healthcare organisations for which we also had BSAQ data.

After constructing the factor scores representing the six BSAQ dimensions and the total BSAQ score, we explored whether these Board-level variables were correlated with the patient safety measures listed in Table 9. However, we found no strong correlations between any of the six BSAQ dimensions or the total BSAQ score and the various patient safety measures listed. Regression results are presented in Table 10A-E for the patient safety measures listed in Table 9. Coefficients for the effect of BSAQ total score are small, non-significant (with the sole exception of *C. diff* rates) and not consistently either positively- or negatively-signed.

Overall then, the results are not significant for the total BSAQ score in any of the patient safety measure regressions. Taken together then, in these data we see no strong evidence of an empirical relationship between self-assessed Board competencies (as measured through BSAQ) and these important safety-related organisational outcomes.

4. Discussion

Hospital Boards have many roles and influences, and a growing theoretical literature (Chambers et al., 2013) attests to both the diversity of those roles and the varied assumptions and perspectives that underpin different ways of thinking about them. Empirical work to date, while offering intriguing glimpses into the potential importance of Boards (Millar et al., 2013), has not yet been able to fully unravel either the extent of Boards' impacts or the mechanisms by which such impacts are achieved.

Table 9
Patient safety and health care quality measures at organisation level.

		Mean	Min	Max
Relative Risks				
HSMR	**Hospital Standardized Mortality Risk** (spells with a primary diagnosis of any of 56 CCS groups)	99.1	67.1	120.3
HSMR2	**Hospital Standardized Mortality Risk** (spells with any primary diagnosis)	98.8	66.9	116.4
VLRM	**Very Low Risk Mortality** (spells with a primary diagnosis associated with a low mortality diagnosis group – consistently below 0.5%)	95.3	37.3	181.3
ASM	**After Surgery Mortality** (deaths following surgery with complications)	98.7	37.7	192.9
HSMR_E	**Hospital Standardized Mortality Risk for weekend emergency admissions** (in-hospital deaths following weekend emergency admissions)	97.3	68.9	117.9
HSMR_EW	**Hospital Standardized Mortality Risk for weekday emergency admissions** (in-hospital deaths following weekday emergency admissions)	104.5	61.5	131.0
READM	**28 day readmissions**	99.7	6.6	83.6
Rates				
MRSA	[MRSA/(total number of spells)]*10000	0.7	0.0	2.8
MSSA	[MSSA/(total number of spells)]*10000	1.8	0.5	6.2
C. diff	[C. diff/(total number of spells)]*10000	4.2	1.4	13.6
Ecoli	[Ecoli/(total number of spells)]*10000	24.0	14.8	64.4
PSI	rate of organisational patient safety incidents	6.9	2.0	17.6
Day-case/Inpatient	Day-case over inpatient rate	4.5	0	11.3
Count				
Never events	total number of never events	1.7	0.0	9.0

In this fresh empirical investigation, we accomplish several things. First, in the new context of English acute hospitals we demonstrate the validity of the six dimensions of an established Board assessment tool (BSAQ) (Chait et al., 1991) that focuses on competencies (Nordhaung, 1993). The validation improves on previous assessments by doing a factor analysis applied to ordinal data, calculating both factor scores and factor-based scales, and developing a composite BSAQ score from the factor scores. We believe this work provides a rigorous and robust justification for using BSAQ in the context of the English NHS, and hope that others will utilise this tool in future work. Moreover, the BSAQ tool's attention to Board competencies (and not just Board structure, composition or processes) provides valuable insights into what Boards need to learn in order to be able to function effectively, and the role that such learning might play in organisational dynamics and performance.

We believe that the availability of contextually-validated instruments such as BSAQ has the potential to stimulate better-grounded research on Board governance. In particular, there is a need for more elaborate models of governance that link the structure, process, competence and human capital of Boards to intermediate and proxy variables within organisations and so to patient safety and quality outcomes for that organisation. Such models could begin to tease out, for example, the areas of tension between different conceptualisations of governance (e.g. agency versus stakeholder views), and the trade-offs in competences needed when Boards try to manage financial balance alongside quality and safety in a context of rising demand and limited resource. No one approach is likely to be sufficient, but modelling Board competencies both addresses the 'black box' of Board composition arguments (e.g. clinical expertise versus business expertise on boards (Pritchard and Hardy, 2014)) and helps direct Board development and training activities to where they might make a difference.

In the second strand of this work, we explored the relationships between board governance and a variety of measures of staff perceptions of their organisation's ability to address quality and safety concerns. The relationships uncovered were consistently patterned as would be expected if Board governance mattered for effective organisational responses, and we found a statistically significant (and positive) association between Board governance and two measures: that of staff feeling confident about raising concerns; and that of staff feeling confident that their organisation would address such concerns. Moreover, drilling down into these two relationships highlighted the importance of the contextual and strategic dimensions of Board competencies – suggesting that these two areas might warrant greater attention in board training. In addition, the lack of strong relationships between Board governance measures and the wider set of staff perceptions on organisational readiness and responsiveness on quality and safety suggest that these issues might fruitfully be emphasised in Board training, for example, on policies of openness, reporting and whistle-blowing (Mannion et al., 2015; Mannion and Davies, 2015).

Taken together, such findings highlight the importance of mixed-models of Board governance, models that exploit and balance insights from across a wide range of models of governance. Indeed, one of the advantages of the competencies approach taken here is that different dimensions of the BSAQ tool link explicitly to different theoretical preoccupations. For example: the *Contextual* dimension reflects the Board's monitoring and accountability function proposed by *agency theory*; the *political* dimension emphasises the board's wider connections as highlighted in *resource dependency theory*; and the *analytical* and *educational* dimensions of competence are central to *group decision process theories*.

Finally, we used multivariate regression models to explore correlations between composite BSAQ scores and various measures of patient safety and quality, but here we found no statistically significant associations (bar one, an apparent relationship between BSAQ scores and *C. diff* rates). Of course, an absence of evidence is not evidence of absence: the hypothesised link between Boards and outcomes has been seen in other studies (Jha and Epstein, 2010; Jiang et al., 2009), and remains a plausible relationship to be substantiated and unpacked. There are a variety of methodological reasons why no strong associations have been uncovered in this work.

The failure to uncover associations between Board-level competencies and organisational outcomes for safety and quality suggest the need for further methodological refinement. While the

Table 10
A-E: BSAQ and other organisation variables correlated with patient safety measures.

Table 10A: mortality data (part 1)

	HSMR		HSMR2		VLRM	
intercept	91.41***	(2.96)	91.65***	(3.01)	100.05***	(9.27)
BSAQ score	−1.43	(1.42)	−1.50	(1.44)	−0.20	(4.44)
foundation	3.63**	(2.12)	4.45**	(2.16)	0.13	(6.65)
Respondents/board	−6.96	(5.30)	−7.67	(5.39)	−12.75	(16.60)
small	9.72***	(3.23)	8.78***	(3.29)	−5.55	(10.13)
medium	6.88**	(2.93)	5.73*	(2.98)	−1.78	(9.18)
large	12.42***	(3.11)	11.65***	(3.16)	2.00	(9.75)
R2	0.20		0.19		0.014	

Table 10B: mortality data (part 2)

	ASM		HSMR_E		HSMR_EW	
intercept	101.64***	(8.14)	89.92***	(2.88)	95.97***	(3.64)
BSAQ score	−3.84	(3.90)	−1.48	(1.38)	−1.23	(1.74)
foundation	−0.30	(5.84)	3.46*	(2.07)	4.34	(2.61)
Respondents/board	6.14	(14.59)	−6.18	(5.16)	−9.27	(6.52)
small	−5.96	(8.90)	9.08***	(3.15)	11.54***	(3.98)
medium	−9.31	(8.07)	6.54**	(2.85)	7.85**	(3.61)
large	−1.32	(8.57)	11.88***	(3.03)	14.13***	(3.83)
R2	0.03		0.19		0.18	

Table 10C: infection rates

	MRSA_rate		MSSA_rate		C. diff_rate	
intercept	0.82***	(0.15)	2.16***	(0.25)	4.87***	(0.52)
BSAQ score	0.03	(0.07)	0.07	(0.12)	0.43*	(0.25)
foundation	−0.08	(0.10)	−0.02	(0.18)	0.01	(0.37)
Respondents/board	0.02	(0.26)	0.59	(0.46)	−0.09	(0.93)
small	0.27	(0.16)	−0.52*	(0.28)	−0.19	(0.57)
medium	−0.16	(0.14)	−0.68***	(0.25)	−1.32**	(0.52)
large	−0.21	(0.15)	−0.61**	(0.27)	−0.33	(0.55)
R2	0.14		0.11		0.14	

Table 10D: safety indicators

	ecoli_rate		Never events		Org_PSI_rate	
intercept	21.03***	(2.00)	2.82***	(0.50)	5.91***	(0.68)
BSAQ score	0.08	(0.96)	−0.02	(0.24)	−0.01	(0.33)
foundation	−0.54	(1.44)	−0.01	(0.36)	−0.02	(0.49)
Respondents/board	6.41*	(3.59)	−2.06**	(0.89)	3.44***	(1.22)
small	3.38	(2.19)	−1.20**	(0.55)	0.91	(0.74)
medium	1.66	(1.98)	−0.38	(0.49)	0.08	(0.67)
large	0.93	(2.11)	−0.67	(0.52)	−0.60	(0.72)
R2	0.07		0.06		0.12	

Table 10E: process of care indicators

	Day-case/inpatient		READM	
intercept	5.10***	(0.53)	97.15***	(1.95)
BSAQ score	−0.02	(0.25)	−0.41	(0.93)
foundation	−0.33	(0.38)	−1.87	(1.40)
Respondents/board	−0.97	(0.95)	4.93	(3.49)
small	−0.30	(0.58)	2.78	(2.13)
medium	0.11	(0.52)	1.86	(1.93)
large	−0.38	(0.56)	3.87*	(2.05)
R2	5.10***	(0.53)	0.11	

Standard errors in parentheses. * $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$.

measure used to understand Boards (BSAQ) has been further validated by this work, it may well be that the raft of measures used to examine organisational outcomes in this study were too crude or too aggregated to have sufficient sensitivity. Utilising a greater variety of measures in future studies may shed more light, for example: using proxy measures (such as those examining staff attitudes, or those measuring management practices). Study designs too may need a greater degree of sophistication. Quantitative work (such as that reported here) may need to develop more elaborate and pre-specified models linking macro governance features to front-line staff behaviour (through intermediate and proxy mechanisms) and so to patient outcomes (good and bad). Such models will need to have regard to the likely presence of lags in these relationships, and will need to do more to address issues of causality and any directionality in this (it may be reasonable to suppose that performance achievements can drive different patterns of governance as much as different patterns of governance can drive performance).

In sum, this is, as far as we know, the first nation-wide study of Board-level competencies and their relationship with patient safety process and outcomes. It establishes the BSAQ as a validated tool in the English NHS context, and demonstrates through robust statistical analysis important relationships between Boards' competencies and staff perceptions. The lack of evidence of any direct and immediate effect of Boards on organisational outcomes leaves this still as an area for further empirical work.

Acknowledgements

The authors would like to thank the editor and reviewers for their helpful comments and suggestions in developing this article. The research was funded by the National Institute for Health Research (NIHR) Health Services and Delivery Research (HS&DR) programme (grant no. 10/1007/02; project title 'Effective board governance of safe care'; co-applicants R. Mannion, T. Freeman and HTO Davies). The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the HS&DR programme or the Department of Health.

References

Botje, D., Niek, S., Klazinga, N.S., Wagner, C., 2014. To what degree is the governance of Dutch hospitals orientated towards quality in care? Does this really affect performance? Health Policy 113, 134–141.
Boyatzis, R., 2008. Competencies in the 21st century. J. Manag. Dev. 27 (1), 5–12.
Brown, W., 2005. Exploring the association between board and organizational performance in nonprofit organizations. Nonprofit Manag. Leadersh. 15 (No 1), 317–339.
Cattell, R.B., 1966. The scree test for the number of factors. Multivar. Behav. Res. 1 (2), 245–276.
Chait, R., Holland, P., Taylor, B., 1991. The Effective Board of Trustees. Macmillan, New York.
Chait, R.C., Holland, T.P., Taylor, B.E., 1993. The Effective Board of Trustees. Oryx Press, Phoenix.
Chambers, N., Harvey, G., Mannion, R., Bond, J., Marshall, J., 2013. Towards a framework for enhancing the performance of NHS boards: a synthesis of the evidence about board governance, board effectiveness and board development. Health Serv. Deliv. Res. 1 (6).
Comrey, A.L., Lee, H.B., 1992. A First Course in Factor Analysis. Lawrence Erlbaum Associates, Hillsdale, New Jersey.
Emslie, S., 2007. Exploring the Factors that Measure the Performance of Boards of Directors of NHS Foundation Trusts and the Association between Board and Organisational Performance. MSc dissertation. Department of Management, Birkbeck College, University of London.
Francis, R., 2013. The Mid Staffordshire NHS Foundation Trust Public Inquiry. Stationery Office, London.
Freeman, T., Millar, R., Mannion, R., Davies, H., 2016. Enacting corporate governance of healthcare safety and quality: a dramaturgy of hospital boards in England. Sociol. Health & Illn. 38, 233–251.
Hillman, A.J., Dalziel, T., 2003. Boards of directors and firm performance: integrating agency and resource dependence perspectives. Acad. Manag. Rev. 28 (3), 383–396.
Holland, T.P., 1991. Self-assessment by nonprofit boards. Nonprofit Manag. Leadersh. 2 (1), 25–36.
Holland, T.P., Jackson, D.K., 1998. Strengthening board performance: findings and lessons from demonstration projects. Nonprofit Manag. Leadersh. 9 (1), 121–134.
Jackson, D.K., Holland, T.P., 1998. Measuring the effectiveness of non-profit boards. Nonprofit Volunt. Sect. Q. 27 (2), 159–182.
Jha, A.K., Epstein, A.M., 2010. Hospital governance and the quality of care. Health Aff. 29 (1), 182–187.
Jiang, H.J., Lockee, C., Bass, K., Fraser, I., 2009. Board oversight of quality: any differences in process of care and mortality? J. Healthc. Manag. 54 (1), 15–30.
McDonagh, K.J., 2006. Hospital governing boards: a study of their effectiveness in relation to organizational performance. J. Healthc. Manag. 51 (6), 377–389.
Mannion, R., Davies, H.T.O., 2015. Cultures of silence and cultures of voice: the role of whistleblowing in healthcare organisations. Int. J. Health Policy Manag. http://dx.doi.org/10.15171/ijhpm.2015.120.
Mannion, R., Davies, H., Millar, R., Freeman, T., Jacobs, R., Kasteridis, P., 2015.

Overseeing oversight: governance of quality and safety by hospital boards in the English NHS. J. Health Serv. Res. Policy 20 (15), 9–16.
Mannion, R., Freeman, T., Millar, R., Davies, H., 2016. Effective board governance of safe care: a (theoretically underpinned) cross-sectioned examination of the breadth and depth of relationships through national quantitative surveys and in-depth qualitative case studies. Health Serv. Deliv. Res. 4 (4).
Millar, R., Mannion, R., Freeman, T., Davies, H., 2013. Hospital board oversight of quality and patient safety: a narrative review and synthesis of recent empirical research. Milbank Q. 91 (4), 738–770.
NHS Commissioning Board, 2012. Compassion in Practice. Department of Health, Leeds.
Nordhaung, O., 1993. Human Capital in Organisations: Competence, Training and Learning. Scandinavian University Press, Oslo, Norway.
Pritchard, C., Hardy, J., 2014. An analysis of National Health Service Trust websites on the occupational backgrounds of non-executive directors' on England's acute trusts. JRSM Open. http://dx.doi.org/10.1177/1062860613485407. Epub ahead of print.
Tsai, T.C., Jha, A.K., Gawande, A.A., Huckman, R.S., Bloom, N., Sadun, R., 2015. Hospital board and management practices are strongly related to hospital performance on clinical quality metrics. Health Aff. 34 (8), 1304–1311.
Veronesi, G., Kirkpatrick, I., Vallascas, F., 2013. Clinicians on board: what difference does it make? Soc. Sci. Med. 77, 147–155.
Yusoff, W., Armstrong, A., 2012. What competencies should directors Possess? Malaysia perspective. Int. J. Bus. Manag. 7 (No. 2), 660–675.