European Journal of Education 2020; 55 (1) 24-42. DOI: 10.1111/ejed.12383

The school as a learning organisation: The concept and its measurement

Marco Kools (1), Louise Stoll (2), Bert George (3), Bram Steijn (4), Victor Bekkers (4) and Pierre Gouëdard (1)

(1) OECD, Paris, France
(2) UCL Institute of Education, London, UK
(3) Department of Public Governance and Management, Ghent University, Ghent, Belgium
(4) Erasmus University Rotterdam, Rotterdam, The Netherlands

ABSTRACT

A growing body of scholars, educators and policy makers has argued for reconceptualising schools as "learning organisations" in the last 25 years as. However, a lack of clarity on the concept has hindered its advance in theory and practice. This study responds to this problem by developing a schools as learning organisations scale that expands and clarifies the concept on several points. Drawing on survey data (*n*school staff = 1,703) from Wales (UK), it examines the key characteristics of a school as a learning organisation through a principal component analysis and reliability analysis. The results showed that such a school is associated with eight dimensions: (a) a shared vision centred on the learning of all students, (b) partners contributing to school vision, (c) continuous learning opportunities, (d) team learning and collaboration, (e) a culture of enquiry, innovation and exploration, (f) systems for collecting and exchanging knowledge and learning, (g) learning with and from the external environment, and (h) modelling learning leadership. The resulting 65-item scale demonstrated good psychometric qualities. A reliable and valid schools as learning organisations scale can help enhance our understanding of the concept. The scale can also be used by school leaders, teachers and all others wanting to develop a thriving learning culture in their schools.

1. INTRODUCTION

There is little doubt that education has played and will continue to play a crucial role in transforming societies (Desjardins, 2015). Schools today must learn faster than ever, with teachers being urged to become “knowledge workers” in order to deal effectively with the growing pressures of a rapidly changing environment (Benevot 2017; Fullan & Quinn, 2016; Schleicher, 2012). In today's world, they need to prepare students for life and work in a rapidly changing environment, for jobs and for using technologies, some of which have not yet been created (Benevot, 2017; Schleicher, 2018). Cognitive abilities such as literacy and problem solving are still crucial, but teachers must also support students in developing the strong social and emotional foundation skills needed to thrive in a highly dynamic labour market and rapidly changing world. Education today is much more about ways of thinking that involve creative and critical approaches to problem solving and decision-making where students influence what they learn. Their interests, motivation and overall well-being are taken into consideration for shaping their learning (Dumont, Istance, & Benavides, 2010; Trilling & Fadal, 2009). Traditional models of schooling whose organisational patterns deeply structure schools—the single teacher, the classroom segmented from other classrooms, each with their own teacher, and traditional approaches to teaching and classroom organisation, etc.—are therefore inadequate for delivering these 21st century learning agendas (Sawyer, 2008).

In this context, a growing body of scholars, educators and policy makers have argued for reconceptualizing schools as “learning organisations”, which they consider the ideal type of organisation for dealing with the changing external environment, facilitating and sustaining organisational change and innovation and even improving student and HR outcomes (Ariel

Tichnor-Wagner, Harrison, & Cohen-Vogel, 2016; Fullan, 2018; Giles & Hargreaves, 2006; Senge, Cambron-McCabe, Lucas, Smith, & Dutton, 2012; Silins & Mulford, 2004). This article analyses the strategies, processes and learning mind-set that make a school a learning organisation. It presents a reliable and valid schools as learning organisations scale that allows for the holistic measurement of the concept. This scale can be used for research to further enhance our understanding of the concept, i.e., "what"
makes a school a learning organisation and "how" such schools can be developed and sustained. It can also inform schools in their self-evaluations and improvement planning by providing practical guidance to those wanting to establish a thriving learning culture in their schools.

Earlier studies have proposed models of the school as a learning organisation and used quantitative scales to validate these. A shortcoming of most of these studies and measurement instruments, however, is their small-scale application, as the scholarly interpretations of the school as a learning organisation vary, sometimes considerably (Kools & Stoll, 2016). This "scholarly chaos" partially stems from a shortage of systematic research on the concept. This leaves us with a lack of clarity or common understanding of what makes a school a learning organisation. This study responds to this challenge by developing a reliable and valid quantitative scale for measuring the school as a learning organisation.

But what is the added value of developing such a scale? Does it really add to already existing scales such as the School Success Profile-Learning Organization (SSP-LO) survey (Bowen, Rose, & Ware, 2006) or the Dimensions of the Learning School Questionnaire (Akram, Watkins, & Sajid, 2013). The answer is affirmative. But an alternative measurement as proposed in this article is necessary for several reasons. First, based on the school as a

learning organisation model of Kools and Stoll (2016), the scale includes two important extensions of the concept that are not included in other measurements. Although most of the literature is clear about the need to develop a vision which should be a "shared process" which involves teachers, school leaders and other local stakeholders, little is said about its content. This risks diluting developmental efforts and ensuring that all students are provided with the skills to prepare them for life in the 21st century—schools' core mission, whether a learning organisation or not (Chapman, Muijs, Reynolds, Sammons, & Teddlie, 2016; Scanlan, 2012). The scale developed in this article includes such a vision.

Furthermore, for education professionals to develop as high-quality knowledge workers requires them to engage in networked learning and collaboration across school boundaries, for example with staff in other schools, the community and higher education institutions (Harris & Tassell, 2005; Kahne, O'Brien, Brown, & Quinn, 2001; Kaser & Halbert, 2014; Senge et al., 2012). Unlike much of the literature and developed scales, this scale includes a strong focus on these external connections. However, further research on and empirical validation of the Kools and Stoll model is needed to strengthen the current evidence base and move towards a common understanding of the concept. This call for further research and possible refinement of the model has initially been answered in OECD's study on the development of schools as learning organisations in Wales (UK) (OECD, 2018) on which this study is partly based. Wales has recently set the objective of developing all its schools into learning organisations in support of its primary objective to successfully implement its new school curriculum. The OECD study aims to support Wales in realising this objective by examining to what extent schools have put into practice the characteristics that make a school a learning organisation and identifying strengths and areas for improvement. The scale presented in this article was used for this purpose as part of a mixed methods study design.

The second contribution of this scale is that it not only seeks the views of school leaders and teachers, but also asks teaching support staff to share their opinions on their schools. Though much of the school as a learning organization literature is silent about teaching support staff, they should not be overlooked, as a school as a learning organisation depends on the joint efforts of all its staff to blossom and continue to thrive.

Third, the development process of the scale included the engagement and active contributions of a large number of representatives from schools and other stakeholders in Wales, thereby enhancing its relevance and support for using it (and the model on which it is founded) to inform school improvement efforts.

Finally, although other scales on the school as a learning organisation have been developed, they are few and are not always easily accessible. This scale provides all those who want to develop their schools as learning organisations with an additional, accessible tool to help them with this endeavour. The option of being able to select a scale that best fits the local context of a given school may help to advance the school as a learning organization in practice.

2. THE SCHOOL AS A LEARNING ORGANISATION

The concept of the learning organisation started gaining popularity in the literature in the late 1980s. The release of Senge's (1990) The Fifth Discipline: The Art & Practice of The Learning Organization greatly contributed to this. Whilst there are many interpretations of the concept, it is generally agreed that the learning organisation is necessary for dealing with the

rapidly changing external environment, is suitable for any organisation and that an organisation's learning capability will be the only sustainable competitive advantage in the future (Örtenblad, 2004; Pedler & Burgoyne, 2017).

Learning organisation theorists have been influenced by three theories in particular, i.e., systems theory, organizational learning and strategic management. The latter emphasises the role of leadership in developing a learning organisation (Örtenblad, 2002; Senge, 1990; Yang, Watkins, & Marsick, 2004). Most see the learning organization as a multi-level concept and define it as "organic" and in terms of the interrelations between individual behaviours, team organisation and organisational practices and culture (OECD, 2010). In a learning organisation, the beliefs, values and norms of employees are brought to bear through the development of deliberate conditions, strategies and processes that support sustained learning where a "learning culture" is nurtured. In a learning organisation, "learning to learn" is a fundamental value that is put into practice on a daily basis (Senge, 1990).

The theoretical foundation for the development of the Schools as Learning Organisations Survey that was used as part of the OECD study in Wales was the school as a learning organisation model proposed by Kools and Stoll (2016, p. 10) who define a school as a learning organisation as one "that has the capacity to change and adapt routinely to new environments and circumstances as its members, individually and together, learn their way to realising their vision". Based on and extending the learning organisation model of Watkins and Marsick (1999), as operationalised in the Dimensions of the Learning Organisation Questionnaire (DLOQ), Kools and Stoll conceptualized the characteristics of the school as a learning organisation in a model that consists of seven "action-oriented" dimensions (see Figure 1). They expanded the DLOQ in certain areas. These included clarifying the school's

vision, i.e., what it should focus on and who it should apply to, expanding the concept of professional learning as going beyond school boundaries and focusing attention on teaching support staff. The seven dimensions and their underlying characteristics, referred to by the authors as “elements”, highlight both what a school aspires to be and the processes through which it goes as it transforms itself into a learning organisation. The authors argue that all dimensions are essential for this transformation to be sustainable.

[Figure 1 here]

3. METHODS

The efforts to develop a measurement instrument for the school as a learning organisation were based on the scale development guidelines of DeVellis (2016) (see Figure 2).

[Figure 2 here]

3.1 Item generation and expert review

Following completion of the Kools and Stroll's school as a learning organisation model (in May 2016), work began on translating it into a self-report survey instrument. For each of the seven dimensions, items were generated in the form of a five-point Likert scale with the answer options “strongly disagree”, “disagree”, “neutral”, “agree” and “strongly agree”. This type of self-reported scale is commonly used in public administration to measure core public management and governance concepts (George & Pandey, 2017; McNabb, 2015).

An early draft of the survey instrument was reviewed by 30 school and system leaders during a workshop at the UCL Institute of Education in England. A revised version was discussed during an expert meeting organized by the OECD. The panel of 14 international experts had in-depth knowledge and practical skills in survey design and statistical analysis, the (school as) learning organisation, innovative learning environments and school improvement more broadly. Much effort was devoted to deleting items that overlapped and clarifying the survey item text. This resulted in a survey of 72 items across the seven theorised school as a learning organization dimensions.

3.2 Tailoring the survey to the Welsh context and revision

The survey was then tailored to the Welsh context with the support of a group of stakeholders from various levels of Wales' education system. The developmental work included a field trial of the survey, using a purposeful sample of 32 schools (OECD, 2018). These efforts resulted in a 69-item survey that was ready for use as part the OECD study in Wales.

3.3 Sampling and response rate

A random sample of 40% of primary, middle and secondary schools in Wales was selected to be part of the selfreport
survey. A small number of schools was excluded because of scheduled closings or mergers. This resulted in
a final sample of 571 schools whose staff were all invited to complete the online survey. A total of 1 703 school

staff—336 school leaders, 811 teachers, 382 teaching support staff and 174 respondents who did not indicate
their position—from 178 schools in Wales did so. This (absolute) response rate is significantly above the minimum of 300 respondents for testing a new scale (Guadagnoli & Velicer, 1988; Krosnick, 2018). A detailed analysis of the data showed that these schools sufficiently matched the overall school population in Wales (see Appendix A) (OECD, 2018).

4. FINDINGS

4.1 Results of the principal component analysis

After controlling for the suitability of the data, the study moved forward with a principal component analysis. This is a proven procedure in scale development that is commonly used in the social sciences (Field, 2013; Tummers, 2012). At this early stage in developing a schools as learning organisations scale, this method is favoured over methods that test hypothesised groups, such as confirmatory factor analysis. An oblique rotation was chosen because this is the favoured rotation method when components are expected to be related (Field, 2013), which was expected to be the case (Kools & Stoll, 2016).

The findings of the principal component analysis largely supported the theorised school as a learning organization model. The data, however, revealed a scale consisting of eight dimensions, instead of the theorised seven (Kools & Stoll, 2016; Welsh Government, 2017). The data suggested that the “developing a shared vision centred on the learning of all students” dimension consisted of two dimensions. These were labelled “shared vision centred

on the learning of all students" and "partners contributing to the school's vision". Furthermore, the initial component solution contained three survey items that did not load on any of the dimensions (i.e., loading >0.40). The data also revealed one item in the second component solution that did not load on the correct dimension from a theoretical perspective. These four items were deleted.

A third component solution revealed two items that double loaded on two dimensions. It was decided to allocate them to the dimension on which they loaded the heaviest. Having obtained the component structure, the Cronbach alpha was determined for each dimension. The Cronbach alpha's were all above the 0.80 threshold for newly-developed scales (Byrne, 2010; Field, 2013). The results are shown in Table 1.

[Table 1 here]

4.2 Descriptive statistics

Having identified the items belonging to each dimension, the study determined the variance in scores on these. The dimension scores were measured by weighting all items equally (see Table 2). The data showed that, although the average scores on the school as a learning organisation dimensions were quite high, there was significant variance between and within them. For example, there was a 0.41 difference between the averages of the "shared vision centred on learning of all students" component and "partners contributing to the school's vision".

[Table 2 here]

In line with other research, the data also showed that people's position in the hierarchy of an organization influenced their perception of it (Enticott, Boyne, & Walker, 2008; George & Desmidt, 2018; McCall, Smith, McGilchrist, & Boyd, 2001) and that teachers and teaching support staff were significantly less positive than school leaders in how they viewed their school as functioning as a learning organisation.

4.3 Results of construct validity tests

The principal component analysis led to the decision to delete only four items. Six dimensions had a Cronbach alpha that was above 0.90. This could indicate some redundancy in the content of the items that could artificially increase the internal consistency of the dimension (DeVellis, 2016; Field, 2013). A review of the item-test correlation and the expected reliability after deleting each of the items, however, revealed that none of the items needed to be deleted.

4.4 Predictive validity

The study continued by investigating the predictive validity of the scale by examining the school as a learning organisation and its relationship with staff job satisfaction. Empirical research evidence clearly pointed to a positive relationship between the two (Egan, Yang, & Bartlett, 2004; Gardiner & Whiting, 1997; Kim & Han, 2015; Rose, Kumar, & Pak, 2009). Although less extensive, research in the field of education pointed to a similar positive relationship (Erdem, İlğan, & Uçar, 2014; Razali, Amira, & Shobri, 2013). This potential relationship was explored in a multiple regression analysis. If this relationship was in line

with what was suggested by theory and empirical evidence (i.e., it was positive) this would provide further evidence of the validity of the identified school as a learning organisation scale (DeVellis, 2016).

4.4.1 Multiple regression analysis

Staff job satisfaction was measured through two survey items, the dependent variables: "I find it professionally rewarding to be working at this school" and "I would recommend this school as a good place to learn with and from colleagues". The school as a learning organisation, the independent variable, was defined by averaging the eight identified dimensions. In addition, some commonly used control variables were included in the multiple regression analysis: employment status, highest level of education, position and years of working in education (Conway & Brinner, 2002; Eberhardt & Shani, 1984; Ma & MacMillan, 2010; OECD, 2014).

The data presented in Table 3 show that the school as a learning organisation in Wales is significantly and positively associated with staff job satisfaction. These findings are in line with existing theory and empirical evidence, adding further weight to the validity of the schools as learning organisations scale.

[Table 3 here]

5. DISCUSSION

We set out to develop a reliable and valid scale that allowed for the holistic measurement of a school as a learning organisation and that could be used to further enhance our understanding of the concept and inform schools in their self-evaluations and improvement planning. It offers an alternative to existing scales (Akram et al., 2013; Bowen et al., 2006; Silins, Zarins, & Mulford, 2002). Based on the school as a learning organisation model proposed by Kools and Stoll (2016), an initial scale was developed. Unlike much of the literature and developed scales, this scale clarifies the content of a school's vision by focusing on the realisation of a broad range of learning outcomes of all its students. It has a strong focus on networked learning and collaborations across school boundaries and recognises the importance of teaching support staff. Furthermore, it was refined several times, based on feedback provided by many experts, including representatives from schools and other education stakeholders in Wales, thereby increasing its relevance and support for using the scale to inform school improvement efforts. The refined scale was validated in a survey of 1,703 school staff, i.e., school leaders, teachers and teaching support staff of schools throughout Wales. It consisted of 65 items across eight dimensions: (a) developing a shared vision centred on learning of all students, (b) partners contributing to the school's vision, (c) creating and supporting continuous learning opportunities, (d) promoting team learning and collaboration, (e) establishing a culture of enquiry, innovation and exploration, (f) embedding systems for collecting and exchanging knowledge and learning, (g) learning with and from the external environment, and (h) modelling and growing learning leadership (see Appendix B).

The construct validity of the scale was further examined by looking at the item-test correlation and the expected reliability after deleting each of the items. This showed that none of the items needed to be deleted. We then explored the relationship between the school as a

learning organisation and job satisfaction. Here, the scale also provided further evidence that the school as a learning organisation was indeed measured with the proposed scale.

Like all studies, this study has its limitations. It should be viewed as our first effort to develop a scale for measuring the school as a learning organisation that is applicable to different country contexts. The scale could be improved by rephrasing the one survey item that was found to load on the wrong component from a theoretical perspective: "students are encouraged to give feedback to teachers and support staff". It is the only item in this dimension that begins with the word "students". Rephrasing the item may address this issue. Ideally, this is done with the support of school staff, policy makers and other stakeholders of the country in which the survey is conducted. Furthermore, although arguably not for Wales, trials of the scale the four deleted items could again be included in future, given their theoretical relevance.

In terms of the predictive validity of the scale, improvements could be made by including additional items on staff job satisfaction and/or by extending this concept to staff well-being. Internationally, the concept of staff well-being has recently gained in policy interest because of the growing awareness that, in order to meet the needs of increasingly diverse students, enhancing teacher and school leader professionalism has become essential (Earley & Greany, 2017). In many countries, however, this transition towards enhanced professionalism is taking place in difficult conditions in terms of workload, accountability requirements, level of autonomy and budget pressures—as is the case for Wales (Waters, Jones, & Macdonald, 2018). As a result of these developments, stress and staff well-being have become issues in a number of education systems. Research evidence suggests that the

learning organisation provides a means for responding to these challenges (Proost, Van Ruysseveldt, & Van Dijke, 2012; Watson, Tregaskis, Gedikli, Vaughn, & Semkina, 2018). Furthermore, the predictive validity of the scale could be further enhanced by examining the relationship with student outcomes, for example, by the matching of data sets. Several studies suggest that there is a positive association between the school as a learning organisation and student outcomes (Caprara, Barbaranelli, Steca, & Malone, 2006; Klassen & Chiu, 2010; Silins & Mulford, 2004).

Once the scale has been improved, a logical direction for further research would be to retest it among school staff in Wales, as well as in other countries that are striving to establish collaborative learning cultures in their schools. For Wales, a principal component analysis or an exploratory factor analysis – two often-used data reduction methods in initial stages of scale development (Field, 2013) – could be complemented with or replaced by a confirmatory factor analysis. The latter allows for testing the hypothesis that a relationship exists between the observed variables and their underlying latent construct(s) (DeVellis, 2016; Field, 2013), i.e., the testing of Wales' schools as learning organisations model through the survey data. It would be particularly interesting to explore
whether the data once more revealed an eight-dimension scale rather than the theorised seven dimensions.

For other countries, it would seem desirable to start by reviewing the scale to align it with the national context. A principal component analysis or exploratory factor analysis and reliability analysis may then be used to validate the scale. Again, it will be interesting to learn whether the data from other countries reveal a similar eight-dimension scale as was the case in Wales. National culture may be a factor to take into account. Several studies suggest that cultural

differences may affect how learning organisations are understood (Kim & Watkins, 2017; Retna & Ng Tee, 2016). Further research is needed to investigate the influence of cultural factors on schools developing as learning organisations, as well as the cross-cultural construct validity of the scale.

Furthermore, it would seem of great relevance to examine the practical relevance of the scale, with particular reference to its potential for supporting school improvement processes. International research evidence shows the vital contribution that self-evaluation and development planning can make towards raising the quality of education and student outcomes (Ehren, Altrichter, Mcnamara, & O'Hara, 2013; OECD, 2013; Hofman, Dijkstra, & Hofman, 2009). Several countries and scholars have developed measurement instruments to help schools in their self-evaluations, some of which specifically promote the development of learning cultures in schools (Bowen et al., 2006; Devos & Verhoeven, 2003; Education Scotland, 2015; OECD, 2013). This option is also currently explored in Wales where efforts are being made to integrate its schools as learning organisations model and the identified scale in school self-evaluation and development processes (Estyn, 2018).

Future research could examine the use of the schools as learning organisations scale to guide school staff, the local community, (local) policy makers and others in their efforts to develop their schools as learning organisations and ultimately enhance student learning and well-being. A systematic investigation of this issue, in Wales and other countries, will not only enhance our understanding of the concept, it will most likely also contribute to the identification of further areas for improvement of the schools as learning organisations scale.

6. CONCLUSION

Despite the seemingly growing support among scholars, educators for reconceptualising schools as “learning organisations”, a lack of clarity of the concept and the limited number of scales available to measure it may have hindered its advance in theory and practice. This article also pointed to shortcomings of existing scales. It responded to these by describing the development of a scale that allows for the holistic measurement of the school as a learning organisation, consisting of 65 items and demonstrating good psychometric qualities.

The evidence suggests that such a scale can be valuable for educators, policy makers, scholars and others interested in developing schools as learning organisations. First, as this study has done, it can be used to exploring the characteristics that make a school a learning organisation, although recognising methods such as a confirmatory factor analysis would be needed to confirm or reject the theory that a school as a learning organization consists of seven underlying dimensions, as proposed by Kools and Stoll (2016). Second, it could serve the purpose of the development and/or strengthening of theory, for example by exploring the relationship with other variables such as student outcomes or staff well-being.

Third, in terms of its practical relevance, this scale can be used to guide school staff, the local community and others who are striving to develop their schools as learning organisations.

Fourth, the schools as learning organisations scale could also be useful to policy makers in Wales and in other countries, as it allows for system-level monitoring of the progress schools are making towards developing as learning organisations by identifying strengths and areas for further improvement. The absence of such information leaves governments and other

education stakeholders without an insight into these important policy issues (Waslander, Hooge, & Drewes, 2016). On the other hand, information on these issues could inform the development of strategies that aim to support and enable all schools in making the transformation into learning organisations. In addition, recognising the potential of sharing good practices for promoting school improvements (OECD, 2013), such examples could be systematically collected and shared widely to inspire and inform other schools in their change and innovation efforts. This would seem most important for Wales that has embarked on a curriculum reform; schools would surely benefit from learning from other schools' experiences in innovating teaching and learning.

Additional research, both theoretical and applied, is needed to further explore the scale and its associated value. Lessons learned from applying a contextualised schools as learning organisations scale in other countries will be essential for working towards a common understanding of the characteristics that make a school a learning organisation. Although reaching consensus is a daunting task, it could be achieved through further research and sustained dialogue among scholars, policy makers and educators internationally.

DISCLAIMER

Two of the authors of this article are OECD analysts. However, the analysis and views presented in this article do not necessarily reflect the official views of the OECD or its members. The opinions expressed and arguments employed herein are those of the author(s).

ENDNOTE

1The calculated t statistic follows a Student's law and is computed as: = (x−μ)/(s/√n), with x the average in the sample and μ the population average, s represents the sample standard deviation and n the sample size.

R E FE R E N C E S

Akram, M., Watkins, K., & Sajid, S. (2013). Comparing the learning culture of high and low performing high schools in Pakistan. *Literacy Information and Computer Education Journal*, 4, 1022–1028. https ://doi.org/10.20533 /licej.2040.2589.2013.0147

Ariel Tichnor-Wagner, A., Harrison, C., & Cohen-Vogel, L. (2016). Cultures of learning in effective high schools. *Education Administration Quarterly*, 52, 602–642. https ://doi.org/10.1177/00131 61X16 644957

Benevot, A. (2017). Education for people, prosperity and planet: Can we meet the sustainability challenges? *European Journal of Education*, 52, 399–403. https ://doi.org/10.1111/ejed.12248

Bowen, G., Rose, R., & Ware, W. (2006). The reliability and validity of the school success profile learning organization measure. *Evaluation and Program Planning*, 29, 97–104. https ://doi.org/10.1016/j.evalp rogpl an.2005.08.005

Byrne, B. (2010). Structural equation modeling in AMOS. New York, NY: Routledge Taylor Francis Group. Caprara, G., Barbaranelli, C., Steca, P., & Malone, P. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A

study at the school level. *Journal of School Psychology*, 44, 473–490. https ://doi.org/10.1016/j.jsp.2006.09.001

Chapman, C., Muijs, D., Reynolds, D., Sammons, P., & Teddlie, C. (2016). *The Routledge International Handbook of Educational Effectiveness and Improvement: Research, policy and practice*. Oxford, UK: Routledge.

Conway, N., & Brinner, R. (2002). Full-time versus part-time employees: Understanding the links between work status, the psychological contract, and attitudes. *Journal of Vocational Behavior*, 61, 279–301. https ://doi.org/10.1006/jvbe.2001.1857

Desjardins, R. (2015). Education and social transformation. *European Journal of Education*, 50, 239–244. https ://doi.org/10.1111/ejed.12140

DeVellis, R. (2016). *Scale development: Theory and applications (Vol. 26)*. Los Angeles, CA: Sage.

Devos, G., & Verhoeven, J. (2003). School self-evaluation—Conditions and caveats. The case of secondary schools. *Educational Management & Administration*, 31, 403–420. https ://doi.org/10.1177/02632 11X03 0314005

Dumont, H., Istance, D., & Benavides, F. (2010). The nature of learning: Using research to inspire. Paris, France: OECD Publishing.

Earley, P., & Greany, T. (2017). *School Leadership and Education System Reform*. Oxford, UK: Bloomsbury Academic.

Eberhardt, B., & Shani, A. (1984). The effects of full-time versus part-time employment status on attitudes toward specific organizational characteristics and overall job satisfaction. *Academy of Management Journal*, 27, 893–900.

Education Scotland. (2015). How good is our school? Edinburgh, UK: Author.

Egan, T., Yang, B., & Bartlett, K. (2004). The effect of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human Resource Development Quarterly,* 15, 279–301.

Ehren, M., Altrichter, H., Mcnamara, G., & O'Hara, J. (2013). Impact of school inspections on improvement of schools— Describing assumptions on causal mechanisms in six European countries. *Educational Assessment, Evaluation andAccountability*, 25, 3–43. https://doi.org/10.1007/s11092-012-9156-4

Enticott, G., Boyne, G., & Walker, R. (2008). The use of multiple informants in public administration research: Data aggregation using organizational echelons. *Journal of Public Administration Research and Theory,* 19, 229–253. https ://doi.org/10.1093/jopar t/mun017

Erdem, M., İlğan, A., & Uçar, H. (2014). Relationship between learning organization and job satisfaction of primary school teachers. *International Online Journal of Educational Sciences*, 6, 8–20. https ://doi.org/10.15345 /iojes.2014.01.002

Estyn. (2018). Self-evaluation and school improvement project. Retrieved from www.estyn.gov.wales /self-evaluation-and-school-improvement-project

Field, A. (2013). *Discovering Statistics Using IBM SPSS statistics*. London, UK: SAGE Publications Ltd.

Fullan, M. (2018). *The Principal: Three keys to maximizing impact*. New York, NY: John Wiley & Sons.

Fullan, M., & Quinn, J. (2016). *Coherence: The right drivers for change in schools, districts, and systems*. Thousand Oaks, CA: Corwin.

Gardiner, P., & Whiting, P. (1997). Success factors in learning organizations: An empirical study. *Industrial and Commercial Training*, 29, 41–48. https ://doi.org/10.1108/00197 85971 0165001

George, B., & Desmidt, S. (2018). Strategic-decision quality in public organizations: An information processing perspective. *Administration & Society*, 50, 131–156. https ://doi.org/10.1177/00953 99716 647153

George, B., & Pandey, S. (2017). We know the yin—But where is the yang? Toward a balanced approach on common source bias in public administration scholarship. *Review of Public Personnel Administration*, 37, 245–270. https ://doi.org/10.1177/07343 71X17 698189

Giles, C., & Hargreaves, A. (2006). The sustainability of innovative schools as learning organizations and professional learning communities during standardized reform. *Education Administration Quarterly*, 42, 124–156. https ://doi.org/10.1177/00131 61X05 278189

Guadagnoli, E., & Velicer, W. (1988). Relation of sample size to the stability of component patterns. *American Psychological Association*, 103, 265–275. https ://doi.org/10.1037/0033-2909.103.2.265

Harris, M., & Tassell, F. (2005). The professional development school as learning organization. *European Journal of Teacher Education*, 28, 179–194. https ://doi.org/10.1080/02619 76050 0093255

Hofman, R., Dijkstra, N., & Hofman, W. (2009). School self-evaluation and student achievement. *School Effectiveness and School Improvement*, 20, 47–68. https ://doi.org/10.1080/09243 45080 2664115

Kahne, J., O'Brien, J., Brown, A., & Quinn, T. (2001). Leveraging social capital and school improvement: The case of a school network and a comprehensive community initiative in Chicago. *Educational Administration Quarterly*, 37, 429–461. https ://doi.org/10.1177/00131 61012 1969389

Kaser, L., & Halbert, J. (2014). Creating and sustaining inquiry spaces for teacher learning and system transformation. *European Journal of Education*, 49, 206–217. https ://doi.org/10.1111/ejed.12079

Kim, Y., & Han, S. (2015). Assessing the effects of learning organization characteristics in Korean non-profit organizations: Focusing on the association with perceived financial performance and employee satisfaction. *International Review of Public Administration*, 20, 177–193. https ://doi.org/10.1080/12294 659.2015.1007597

Kim, Y., & Watkins, K. (2017). Current status and promising directions for research on the learning organisation. *Human Resource Development Quarterly*, 15, 15–29.

Klassen, R., & Chiu, M. (2010). Effect on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology*, 102, 741–756.

Kools, M., & Stoll, L. (2016). What makes a school a learning organisation? Paris, France: OECD Publishing.

Krosnick, J. (2018). Questionnaire design. In D. Vannette & J. Krosnick (Eds.), *The Palgrave Handbook of Survey Research* (pp. 241–254). Cham, Switzerland: Palgrave Macmillan.

Ma, X., & MacMillan, R. (2010). Influences of workplace conditions on teachers' job satisfaction. T*he Journal of Educational Research*, 93(1), 39–47. https ://doi.org/10.1080/00220 67990 9597627

McCall, J. S., Smith, I., McGilchrist, B., & Boyd, B. (2001). Views of pupils, parents and teachers: Vital indicators of effectiveness and for improvement. In J. MacBeath & P.

Mortimore (Eds.), *Improving School Effectiveness* (pp. 74–101). Buckingham, UK: Open University Press.

McNabb, D. (2015). *Research Methods in Public Administration and Nonprofit Management*. New York: Routledge.

OECD. (2010). Innovative workplaces: Making better use of skills within organisations. Paris, France: Author.

OECD. (2013). Synergies for better learning. Paris, France: Author.

OECD. (2014). TALIS 2013 technical report. Paris, France: Author.

OECD. (2018). Developing schools as learning organisations in Wales. Paris, France: Author.

Örtenblad, A. (2002). A typology of the idea of learning organization. *Management Learning*, 33, 213–230. https ://doi.org/10.1177/13505 07602 332004

Örtenblad, A. (2004). The learning organization: Towards an integrated model. *The Learning Organization*, 11, 129–144.
https ://doi.org/10.1108/09696 47041 0521592

Pedler, M., & Burgoyne, J. (2017). Is the learning organisation still alive? *The Learning Organization*, 24, 119–126. https :// doi.org/10.1108/TLO-12-2016-0087

Proost, K., Van Ruysseveldt, J., & Van Dijke, M. (2012). Coping with unmet expectations: Learning opportunities as a buffer against emotional exhaustion and turnover intentions. *European Journal of Work and Organizational Psychology*, 21, 7–27. https ://doi.org/10.1080/13594 32X.2010.526304

Razali, M., Amira, N., & Shobri, N. (2013). Learning organization practices and job satisfaction among academicians at public university. *International Journal of Social Science and Humanity*, 3, 518–521. https ://doi.org/10.7763/IJSSH.2013.V3.295

Retna, K., & Ng Tee, P. (2016). The application of learning organization to enhance learning in Singapore schools. *Management in Education*, 30, 10–18. https ://doi.org/10.1177/08920 20615 619665

Rose, R., Kumar, N., & Pak, O. (2009). The effect of organisational learning on organisational commitment, job satisfaction and work performance. *The Journal of Applied Business Research*, 25, 55–65.

Sawyer, K. (2008). Optimising learning: Implications of learning sciences research. OECD/CERI International Conference "Learning in the 21st Century: Research, Innovation and Policy". Paris, France: OECD Publishing.

Scanlan, M. (2012). A learning architecture: How school leaders can design for learning social justice. *Education Administration Quarterly*, 49, 348–391. https ://doi.org/10.1177/00131 61X12 456699

Schleicher, A. (2012). Preparing teachers and developing school leaders for the 21st century: Lessons from around the world. Paris, France: OECD Publishing.

Schleicher, A. (2018). World class: How to build a 21st-century school system. Paris, France: OECD Publishing.

Senge, P. (1990). *The Fifth Discipline: The art and practice of the learning organization*. New York, NY: Currency Doubleday.

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., & Dutton, J. (2012). *Schools that Learn*. New York, NY: Crown Business.

Silins, H., & Mulford, B. (2004). Schools as learning organizations: Effects on teacher leadership and student outcomes. *School Effectiveness and School Improvement*, 15, 443–466.

Silins, H., Zarins, S., & Mulford, B. (2002). What characteristics and processes define a school as a learning organization? Is it a useful concept to apply to schools? *International Education Journal*, 3, 24–32.

Trilling, B., & Fadal, C. (2009). *21st Century Skills: Learning for life in our times*. San Francisco, CA: John Wiley & Sons.

Tummers, L. (2012). Policy alienation of public professionals: The construct and measurement. *Public Administration Review*, 72, 516–525.

Waslander, S., Hooge, E., & Drewes, T. (2016). Steering dynamics in the Dutch education system. *European Journal of Education*, 51, 477–494. https ://doi.org/10.1111/ejed.12188

Waters, M., Jones, M., & Macdonald, A. (2018). Teaching a valued profession. Working towards a career, conditions and pay framework for school teachers in Wales. Cardiff, UK: Welsh Government.

Watkins, K., & Marsick, V. (1999). Dimensions of the learning organization Questionnaire. Retrieved from www.partnersforlearning.com/instructions.html

Watson, D., Tregaskis, O., Gedikli, C., Vaughn, O., & Semkina, A. (2018). Well-being through learning: A systematic review of learning interventions in the workplace and their impact on well-being. *European Journal of Work and Organizational Psychology*, 27, 247–268. https ://doi.org/10.1080/13594 32X.2018.1435529

Welsh Government. (2017). Schools as learning organisations. Retrieved from https ://beta.gov.wales /schoo s-learning-organisations

Yang, B., Watkins, K., & Marsick, V. (2004). The construct of the learning organization: Dimensions, measurement, and validation. *Human Resource Development Quarterly*, 15, 31–55. https ://doi.org/10.1002/hrdq.1086

Appendices

Appendix A Schools as a Learning Organisation Scale

A. Developing a shared vision centred on the learning of all students

"In my school, …."

A1. The school's vision is aimed at enhancing student's cognitive and social-emotional outcomes, including their wellbeing
A2. The school's vision emphasises preparing students for their future in a changing world
A3. The school's vision embraces *all* students
A4. Learning activities and teaching are designed with the school's vision in mind
A5. The school's vision is understood and shared by all staff working in the school
A6. Staff are inspired and motivated to bring the school's vision to life
A7. All staff are involved in developing the school's vision
A8. School governors are involved in developing the school's vision
A9. Students are invited to contribute to the school's vision
A10. Parents are invited to contribute to the school's vision
A11. External partners are invited to help shape the school's vision

B. Promoting and supporting continuous professional learning for all staff

"In my school, …"

B1. Professional learning of staff is considered a high priority
B2. Staff engage in professional learning to ensure their practice is critically informed and up to date
B3. Staff are involved in identifying the objectives for their professional learning
B4. Professional learning is focused on students' needs
B5. Professional learning is aligned to the school's vision
B6. Mentors/coaches are available to help staff develop their practice
B7. All new staff receive sufficient support to help them in their new role
B8. Staff receive regular feedback to support reflection and improvement
B9. Students are encouraged to give feedback to teachers and support staff *****
B10. Staff have opportunities to experiment with and practise new skills
B11. Beliefs, mind sets and practices are challenged by professional learning

C. Fostering team learning and collaboration among staff

*"**In my school, …**"*

C1. Staff collaborate to improve their practice
C2. Staff learn how to work together as a team
C3. Staff help each other to improve their practice
C4. Staff observe each other's practice and collaborate in developing it *****
C5. Staff give honest feedback to each other
C6. Staff listen to each other's ideas and opinions
C7. Staff feel comfortable turning to others for advice
C8. Staff treat each other with respect
C9. Staff spend time building trust with each other
C10. Staff think through and tackle problems together
C11. Staff reflect together on how to learn and improve their practice

D. Establishing a culture of enquiry, exploration and innovation

"In my school, …"

D1. Staff are encouraged to experiment and innovate their practice
D2. Staff are encouraged to take initiative
D3. Staff are supported when taking calculated risks
D4. Staff spend time exploring a problem before taking action
D5. Staff engage in enquiry (i.e. pose questions, gather and use evidence to decide how to change their practice, and evaluate its impact)
D6. Staff are open to thinking and doing things differently
D7. Staff are open to others questioning their beliefs, opinions and ideas
D8. Staff openly discuss failures in order to learn from them
D9. Problems are seen as opportunities for learning

E. Embedding systems for collecting and exchanging knowledge and learning

"In my school, . . . "

E1.The school's development plan is based on learning from continuous self-assessment and updated at least once every year
E2. Structures are in place for regular dialogue and knowledge sharing among staff
E3. Evidence is collected to measure progress and identify gaps in the school's performance
E4. Staff analyse and use data to improve their practice
E5. Staff use research evidence to improve their practice
E6. Staff analyse examples of good/great practices and failed practices to learn from them
E7. Staff learn how to analyse and use data to inform their practice
E8. Staff regularly discuss and evaluate whether actions had the desired impact and change course if necessary

F. Learning with and from the external environment and larger system

"In my school, …"

F1. Opportunities and threats outside the school are monitored continuously to improve our practice *****
F2. Parents/guardians are partners in the school's organisational and educational processes *****
F3. Staff actively collaborate with social and health services to better respond to students' needs
F4. Staff actively collaborate with higher education institutions to deepen staff and student learning
F5. Staff actively collaborate with other external partners to deepen staff and student learning
F6. Staff collaborate, learn and share knowledge with peers in other schools
F7. The school as a whole is involved in school-to-school networks or collaborations

G. Modelling and growing learning leadership

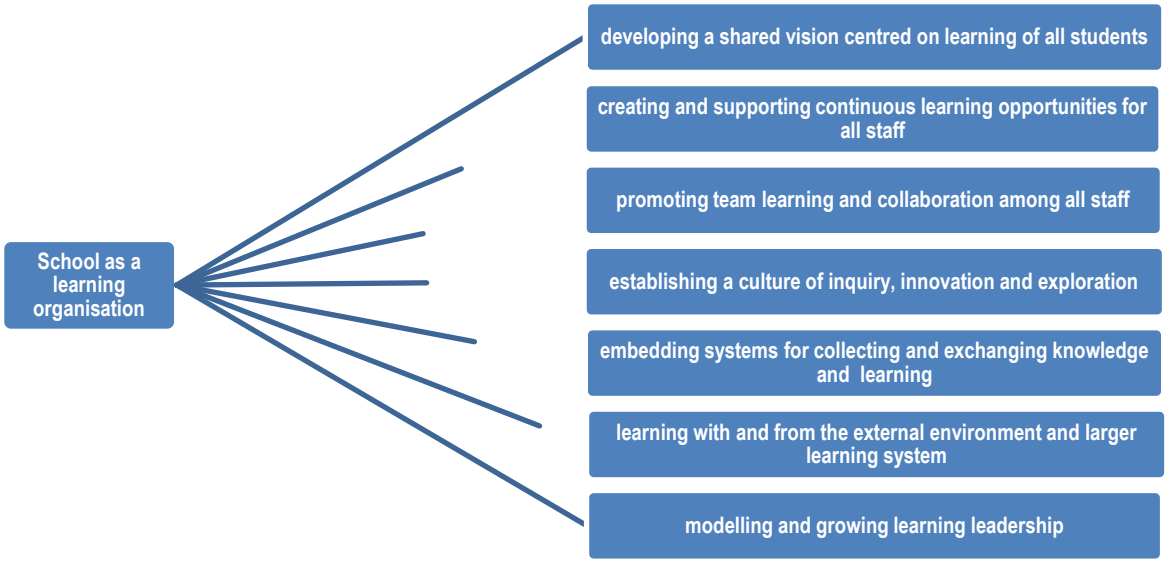
"In my school…"

G1. Leaders participate in professional learning to develop their practice
G2. Leaders facilitate individual and group learning
G3. Leaders coach those they lead
G4. Leaders develop the potential of others to become future leaders
G5. Leaders provide opportunities for staff to participate in decision making
G6. Leaders provide opportunities for students to participate in decision making
G7. Leaders give staff responsibility to lead activities and projects
G8. Leaders spend time building trust with staff
G9. Leaders put a strong focus on improving learning and teaching
G10. Leaders ensure that all actions are consistent with the school's vision, goals and values

G11. Leaders anticipate opportunities and threats
G12. Leaders model effective collaborations with external partners

Note: * Indicates the survey items that the principal component analysis and reliability analysis found not to fit the school as a learning organisation in Wales.

Figure 1 School as a learning organisation model



Source: Kools and Stoll (2016[8]), "What Makes a School a Learning Organisation?", *OECD Education Working Papers*, No. 137, OECD Publishing, Paris.

Figure 2 Schools as learning organisations scale development process

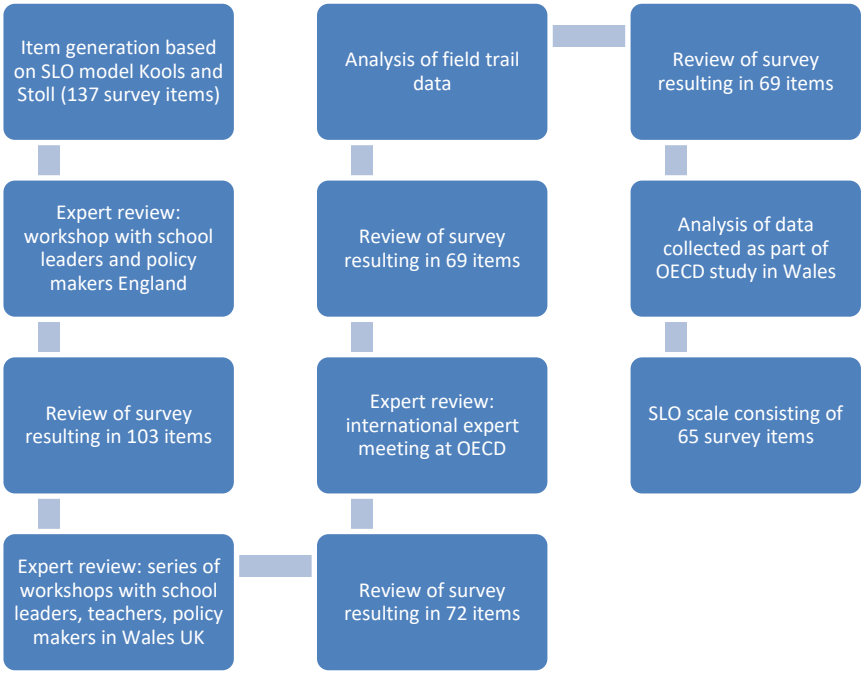


Table 1 School as a learning organisation component/dimension loadings

	Component (C) loadings							
Survey items	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**
The school's vision is aimed at enhancing student's cognitive and social-emotional outcomes, including their wellbeing.	.765							
The school's vision emphasises preparing students for their future in a changing world.	.729							
The school's vision embraces all students.	.736							
Learning activities and teaching are designed with the school's vision in mind.	.660							
The school's vision is understood and shared by all staff working in the school.	.571							
Staff are inspired and motivated to bring the school's vision to life.	.461							
All staff are involved in developing the school's vision.	.519							
School governors are involved in developing the school's vision.	.472							
Students are invited to contribute to the school's vision.		.582						
Parents are invited to contribute to the school's vision.		.737						
External partners are invited to help shape the school's vision.		.704						
Professional learning of staff is considered a high priority.			.798					
Staff engage in professional learning to ensure their practice is critically informed and up to date.			.814					
Staff are involved in identifying the objectives			.854					

for their professional learning.						
Professional learning is focused on students' needs.		.675				
Professional learning is aligned to the school's vision.		.621				
Mentors/coaches are available to help staff develop their practice.		.697				
All new staff receives sufficient support to help them in their new role.		.461				
Staff receive regular feedback to support reflection and improvement.		.612				
Staff have opportunities to experiment with and practise new skills		.429				
Beliefs, mind sets and practices are challenged by professional learning.		.495				
Staff collaborate to improve their practice.			.612			
Staff learn how to work together as a team.			.747			
Staff help each other to improve their practice.			.759			
Staff give honest feedback to each other.			.593			
Staff listen to each other's ideas and opinions.			.825			
Staff feel comfortable turning to others for advice.			.850			
Staff treat each other with respect.			.856			
Staff spend time building trust with each other.			.798			
Staff think through and tackle problems together.			.776			
Staff reflect together on how to learn and improve their practice.			.697			
Staff are encouraged to experiment and innovate their practice.				.520		
Staff are encouraged to take initiative.				.472		
Staff are supported when taking calculated risks.				.517		

Staff spend time exploring a problem before taking action.					.617			
Staff engage in inquiry (i.e. pose questions, gather and use evidence to decide how to change their practice and evaluate its impact).					.739			
Staff are open to thinking and doing things differently.					.773			
Staff are open to others questioning their beliefs, opinions and ideas.					.737			
Staff openly discuss failures in order to learn from them.					.588			
Problems are seen as opportunities for learning.					.614			
The school's development plan is based on learning from continuous self-assessment and updated at least once every year.						.565		
Structures are in place for regular dialogue and knowledge sharing among staff.						.511		
Evidence is collected to measure progress and identify gaps in the school's performance.						.704		
Staff analyse and use data to improve their practice.						.937		
Staff use research evidence to improve their practice.						.653		
Staff analyse examples of good / great practices and failed practices to learn from them.						.652		
Staff learn how to analyse and use data to inform their practice.						.744		
Staff regularly discuss and evaluate whether actions had the desired impact and change course if necessary.						.486		
Staff actively collaborate with social and health services to better respond to students' needs.							.562	

Staff actively collaborate with higher education institutions to deepen staff and student learning.							.740	
Staff actively collaborate with other external partners to deepen staff and student learning.							.663	
Staff collaborate, learn and share knowledge with peers in other schools.							.605	
The school as a whole is involved in school-to-school networks or collaborations.							.631	
Leaders participate in professional learning to develop their practice.								.657
Leaders facilitate individual and group learning.								.731
Leaders coach those they lead.								.893
Leaders develop the potential of others to become future leaders.								.877
Leaders provide opportunities for staff to participate in decision making.								.894
Leaders provide opportunities for students to participate in decision making.								.743
Leaders give staff responsibility to lead activities and projects.								.644
Leaders spend time building trust with staff.								.873
Leaders put a strong focus on improving learning and teaching.								.599
Leaders ensure that all actions are consistent with the school's vision, goals and values.								.721
Leaders anticipate opportunities and threats.								.739
Leaders model effective collaborations with external partners.								.663

Cronbach's alpha	**0.914**	**0.829**	**0.933**	**0.947**	**0.921**	**0.911**	**0.851**	**0.958**
N	**1703**							

Note: The numbers in the table behind each of the items are component/component dimension scores.

Table 2 Descriptive statistics of the eight identified dimensions

	Min	Max	Mean	SE
Shared vision centred on learning of all students	1.00	5.00	4.14	0.67
Partners contributing to school vision	1.00	5.00	3.73	0.73
Creating and supporting continuous learning opportunities for all staff	1.00	5.00	3.96	0.70
Promoting team learning and collaboration among all staff	1.20	5.00	4.11	0.67
Establishing a culture of inquiry, innovation and exploration	1.00	5.00	3.92	0.67
Embedding systems for collecting and exchanging knowledge and learning	1.88	5.00	4.13	0.61
Learning with and from the external environment and larger learning system	1.00	5.00	3.98	0.65
Modelling and growing learning leadership	1.00	5.00	4.07	0.70

Table 3 Summary of regression analysis results

	Dependent variables					
	"I find it professionally rewarding to be working at this school"			"I would recommend this school as a good place to learn with and from colleagues"		
	Coef.	**Beta**	**SE.**	**Coef.**	**Beta**	**SE.**
Independent variable						
Schools as a learning organisation	1.215***	0.730	0.038	1.179***	0.762	0.043
N	1 472			1 472		
R2	0.58			0.61		