Development of the Psychological Climate Scale for Small Business

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Abstract

Background - Psychological climate has been shown to be significantly linked to performance in large service businesses; however, no corresponding research has been conducted in small businesses.

Purpose – The purpose of the current study is to identify the dimensions relevant to psychological climate in small service businesses and to develop the first psychological climate instrument tailored to small businesses.

Design/methodology/approach – Questionnaires incorporating items from previous research in large organisations and new items generated from focus groups were distributed to 316 employees of 52 small businesses (employing up to the equivalent of 20 full-time employees). Principal components analysis was used to identify relevant climate dimensions and to guide development of climate scales. Scale validity and reliability was assessed.

Findings – Seven interpretable psychological climate dimensions were identified and 7 climate subscales developed displaying acceptable to excellent reliability: Owner facilitation & support (α = .95); Job training & standards (α = .90); Regulations organisation & pressure (α = .89); Scheduling (α = .85); Workgroup cooperation, friendliness & esprit (α = .89); Friction & conflict (α = .77); and Standards & objectives (α = .74). A full-scale measure, Global climate (α = .97), was also developed. Mean scores on each subscale and Global climate varied significantly between establishments.

Conclusions – The findings of this study support the notion that differences in the nature of psychological climate between small and large businesses warrant instruments specific to the size of the organisation. The Psychological Climate Scale for Small Business is the first reliable and valid instrument tailored to small businesses, and provides a measure for differentiating between individuals and between establishments in small service organisations. The study was limited to service organisations, comprising cafés and restaurants, and was confined to a single country. Expanding beyond these limitations would increase generalisability.

Key words: psychological climate, organisational climate; field theory; small business; climate scale.
Introduction

Lewin (1943/1975) proposed a person’s behaviour to be systematically influenced by the psychological field within which they exist. Others, such as Deming, propose the workplace psychological environment has a greater affect on the actions of employees than does the person’s individual qualities (Holt 1993). Factor analytic studies presenting employees with a battery of questions relating to their workplace environment have identified dimensions of the individual employee’s psychological field. This psychological field in the workplace has been termed their psychological climate (Jones & James 1979). Psychological climate scores aggregated at the workgroup or organisation level have been argued to represent a characteristic of the organisation, the organisational climate (Jones & James 1979).

In service industries, where the individual employee often represents the interface between customer and organisation, the workplace psychological field has great potential to influence organisational outcomes via its influence on service staff behaviour. Davidson, Manning, Brosnan, and Timo (2002), for example, concluded that 23% of the variation in financial performance in their sample of hotels was explained by organisational climate.

To date, psychological/organisational climate studies in service organisations have almost exclusively been conducted in large multi-department organisations (e.g. Burton, Lauridson & Obel 2004; Davidson, Manning, Timo & Ryder 2001; Manning, Davidson & Manning 2004). The aspects of the workplace environment affecting the psychological climate experienced by employees may potentially be quite different in small businesses as in many ways they represent quite different environments to that of large enterprises. As Ahmad (2005) writes “a small hotel is not a smaller version of a large hotel” (p. 38) with clear differences in funding, management style and business objectives. Tinsley and Lynch (2008) also note that, unlike larger organisations, “many of the skills and resources leading to a small firm’s success exist outside of the firm” (p. 163). The extent of differences in the nature of climate in small businesses compared with large enterprises is currently unknown, but it is likely significant differences exist. Small businesses have, in general, been underrepresented in academic research (Tinsley & Lynch 2008) and to date there have been no studies attempting to identify the dimensions of psychological climate relevant within small service businesses. Consequently, the purposes of the current study are: to conduct the first study identifying the psychological climate dimensions relevant to small service business; to develop the first psychological climate instrument specifically designed for use in small service businesses; and to establish whether aggregated climate scores, representing each firm’s organisational climate, vary significantly between establishments.

Literature review

Lewin (1943/1975) proposed the behaviour of a person at a particular point in time to be a simple function of the ‘psychological field’ (p. 48). Lewin’s field, or ‘life-space’, was an analogue of phase space in physics representing the multiple dimensions affecting an event. He described the life-space of a person to comprise ‘the person and the psychological environment as it exists for him’ (p. 57). From Lewin’s perspective, to understand and predict behaviour, it is not necessary to concentrate on the measurement of past events - the measurement of current events and situations is all that is necessary.

In business research, Lewin’s ‘life space’ has been operationalised as the multidimensional concept ‘psychological climate’ (Jones & James 1979). To measure psychological climate within a particular environment, employees are presented with a set of questions regarding their workplace and the data factor analysed using techniques such as principal components analysis (PCA, Hotelling 1933) to produce a set of orthogonal
theoretical dimensions. This approach has led to studies reporting various numbers of climate dimensions; e.g., Campbell, Dunette, Lawler, and Weick (1970) building on the work of Kahn et al. (1964), Litwin and Stringer (1968) and Schneider and Bartlett (1968), proposed four climate dimensions: individual autonomy; degree of structure imposed upon the situation; reward orientation; and consideration, warmth, and support. To these four, Payne and Pugh (1976) later added a fifth, orientation toward development and progressiveness. In contrast, Insell and Moos (1974) describe only three dimensions: relationship, personal development, and system maintenance.

This approach also led to the development of several climate instruments: Astin and Holland’s (1961) Environmental Assessment Technique; Likert’s (1967) Profile of Organizational Characteristics; Newman’s (1977) Perceived Work Environment scale; Payne and Mansfield’s (1978) Business Organization Climate Index (BOCI); and Patterson, Payne, and West’s (1996) modified version of the BOCI.

Two issues are important in understanding the diversity of the number and nature of the dimensions of psychological climate. The first issue relates to content validity – “the degree to which the questions, tasks, or items on a test are representative of the universe of behaviour the test was designed to sample” (Gregory 1996, p. 108). A factor analytic study can extract a dimension only if the initial battery of items encompass that dimension. To some degree, variation in the comprehensiveness of the original item set can account for variation in the dimensions identified in different studies (Davidson et al. 2001). Second, as Davidson et al. (2001) note ‘it is clear that different types of organization will differentially exhibit variation within particular dimensions’ (p. 446). So, for a factor analytic study to appropriately identify the dimensions of psychological climate for a particular type of organisation, a sufficiently broad set of initial items needs to be used to provide adequate content validity and these items need to be presented to an adequately representative sample of employees from that type of organisation.

Adding to the diversity of climate dimensions and scales, some researchers have deliberately restricted their definition of climate to a particular domain including; safety (Zohar 2000), achievement (Litwin & Stringer 1968), ethical (Victor & Cullen 1988), and service climate (Schneider, White & Paul 1998).

Ryder and Southey (1990) and Davidson et al. (2001) describe the development of the Psychological Climate Questionnaire (PCQ, Jones & James 1979) as, at that time, the most methodologically adequate attempt to develop a climate scale. The strength in the approach taken by Jones and James relates to the content validity of their initial battery of items - a consequence of their systematic attempt at generating a comprehensive set of initial items. Jones and James first conducted an extensive literature review which identified 35 potential climate dimensions, or ‘a priori concepts’. Between two and seven items were generated to represent each a priori concept resulting in a 145 item questionnaire. PCA of the responses of 4,315 US Navy enlisted men identified six dimensions: Conflict and ambiguity; Job challenge, importance and variety; Leader facilitation and support; Workgroup cooperation, friendliness, and warmth; Professional and organizational esprit; and Job standards. Jones and James applied the PCQ to two additional samples - 398 male firemen and 504 employees of a private health care program. Five of the factors were common across all three samples: Conflict and ambiguity; Job challenge, importance and variety; Leader facilitation and support; Workgroup cooperation, friendliness, and warmth; and Professional and organisational esprit.

Ryder and Southey (1990) drew upon Jones and James (1979) initial set of items and modified these for use in a study of employees within a large public service building construction and maintenance authority in Australia. Changes made to the original set of items comprised modifications to the wording, scaling, and presentation format. Items were
reworded to remove culturally specific terminology, to enable the use of non-sexist language, and to make the items applicable for non-military employees. Ryder and Southey judged the scaling of the original instrument to be unsatisfactory, in part due to the inconsistency in response scales employed across the different questionnaire items which included continuous scales and three- and five-point Likert-type scales. Ryder and Southey employed a consistent seven point anchored scale format across all 144 items of their scale. Again, between two and seven items were used to produce each of 35 composite climate variables. They reported that the modified instrument required less time to complete than the original set of items. Using PCA, Ryder and Southey (1990) analysed the responses from 147 employees and reported six dimensions to be interpretable. They labelled their six dimensions: Leader facilitation and support; Job variety, challenge, and esprit; Conflict and pressure; Workgroup reputation, cooperation, friendliness, and warmth; Organizational planning and openness; and Perceived equity.

Davidson et al.’s (2001) study represented the first attempt to identify the dimensions of psychological climate relevant for large service organisations in the tourism and hospitality industry. Their sample comprised 1,401 employees of fourteen four- to five-star hotels. Their initial set of items comprised those originally presented by Jones and James (1979), incorporating the improvements made by Ryder and Southey (1990), rewording items to make them suitable for hospitality employees, and reducing the number of items in the instrument to 70. This was achieved by the consistent use of two items to represent each of the 35 a priori concepts. Seven climate dimensions were identified: Leader facilitation and support; Professional and organizational esprit; Conflict and ambiguity; Regulations, organization, and pressure; Job variety, challenge, and autonomy; Workgroup cooperation, friendliness, and warmth; and Job standards. The authors reported that mean scores on each of these climate dimensions differed significantly between hotels. This 70 item instrument later became known as the Tourism and Hospitality Organisational Climate Scale (THOCS, Davidson & Manning 2003).

Manning et al. (2004) investigated the psychometric properties of a shortened version of the scale, the Tourism and Hospitality Organisational Climate Scale – Revised (THOCS-R). This 35 item instrument comprised a consistent five items for each of the seven dimensions of the scale. Analysing responses from 400 employees of a theme park, confirmatory factor analysis revealed the THOCS-R to reliably measure four of the seven dimensions: Leader facilitation and support; Professional and organizational esprit; Conflict and ambiguity; and Workgroup cooperation, friendliness, and warmth. Manning, Davidson, and Manning (2005) replicated this result. The authors speculate that the failure to validate all dimensions for the THOCS-R may have been a consequence of the validation studies being conducted within a single organisation, rather than across several organisations as had been the case for the development of the original scale.

Across a range of industries, using both psychological climate to investigate individual-level outcomes and aggregated measures of organisational climate to investigate group-level outcomes, climate has been found to be linked with many outcomes including; job involvement (Brown & Leigh 1996), job performance (Pritchard & Karasick 1973), job satisfaction (Schneider & Snyder 1975), financial performance in subsequent years (Denison 1990), productivity in manufacturing (Patterson, Warr, & West 2004; Patterson et al. 2005), innovation (Montes, Moreno & Fernandez 2004), organisational commitment (McMurray, Scott & Pace 2004), and financial returns (Burton, Lauridson & Obel 2004).

Using responses of 1,401 employees of 14 hotels to the THOCS, Davidson et al. (2002) examined the relationship between climate and two organisational outcomes: customer satisfaction (as represented by employee perception of customer satisfaction) and financial performance as represented by RevPAR (calculated as the product of average daily room rate and occupancy proportion). The dimensions of the THOCS were found to account
for 30% of the variation in employee perceptions of customer satisfaction. This measure of customer satisfaction, in turn, explained 23% of the variation in RevPAR between hotels. The authors concluded that even if their indirect measure of customer satisfaction was not valid, but simply represented employees in hotels with better climate rating the customers’ satisfaction more highly, ‘then one must still conclude 23% of the variation in RevPAR between hotels in this study to be the result of variation in organizational climate’ (p. 136).

Analysing responses of 636 food and beverage employees of 14 hotels to the THOCS Davidson and Manning (2003) found the climate dimensions to explain 26.9% of the variance in employee perceptions of customer satisfaction with food and beverage. This measure, in turn, explained 18.5% of the variance in RevPAR between the hotels.

In a study of 400 employees of a theme park, Manning et al. (2004), found the four climate dimensions reliably measured by the THOCS-R (Leader facilitation and support; Professional and organizational esprit; Conflict and ambiguity; and Workgroup cooperation, friendliness, and warmth) to explain 19.4% of the variation in employee turnover intentions, and 20.7% of the variation in employee perceptions of customer satisfaction. In a study with 432 employees from a theme park, Manning et al. (2005) found those same four dimensions to explain 9.8% of the variation in employee turnover intentions and 43.7% of the variation in employee perceptions of customer satisfaction.

The Current Study

To date, climate research has concentrated on large multi-departmental organisations. In several studies within service organisations strong links have been found between psychological climate and individual-level outcomes such as employee turnover intention and employee perception of customer satisfaction, and between aggregated scores (organisational climate) and organisational-level outcomes such as RevPAR. It is likely that in small service businesses similar links between climate and organisational outcomes exist. To date, however, no study has been published which identifies the number and nature of organisational climate dimensions relevant to small service businesses. This study represents the first attempt to measure climate in small service businesses and aims to identify the climate dimensions relevant to these organisations. The second aim of this study is to develop a multi-scale instrument specifically designed for use in small businesses. The third aim of the study is to establish whether the scales, so developed, provide aggregated measures which differ significantly from business to business.

Research method

Participants

The sample of cafés and restaurants was drawn from two coastal tourist destinations in South-East Queensland, Australia. Given organisational climate instruments already exist for use in large multi-departmental organisations, organisations with a simple structure were the focus of this study. Consequently, selection for inclusion in the sample was restricted to organisations meeting the criteria used by the Australian Bureau of Statistics (2005) for a small business employing up to the equivalent of 20 full-time staff. To eliminate complications arising when a single owner operates multiple establishments, the sample was further restricted to establishments comprising only a single outlet and to owners operating only a single establishment. Similarly, to avoid the more complicated interactions involved in multi-unit franchise systems, franchisees were excluded from the study. Single unit outlets such as those studied here are a common
organisational structure within the industry but like all small business they have been under represented in academic research. Although 80 organisations initially agreed to participate, only 52 organisations completed all sections of the study - providing an organisation response rate of 65%. The owners of the organisations indicated that they employed a total of 584 employees of which 316 participated, providing an employee response rate of 54.1%. The distribution of number of employee respondents per establishment is shown in Table 1.

**Table 1**

*Frequency distribution of number of employee respondents (n = 316) per establishment (n = 52).*

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>11.5%</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>11.5%</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>11.5%</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>15.4%</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>13.5%</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>7.7%</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>9.6%</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>5.8%</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>3.8%</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>1.9%</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

**Materials**

In an attempt to maximise content validity, the new climate instrument developed here used an initial set of items based on the 35 *a priori* concepts of Jones & James (1979). Modifications to the items included the psychometric improvements suggested by Ryder and Southey (1990). Further modifications followed Davidson et al. (2001) which reduced the number of items from 145 to 70 so that each *a priori* concept was represented by a consistent number of items (two). Minor modifications in the wording of items to make them relevant to the type of organisation used in this study were also made. For example, the term “hotel” was replaced with the term “establishment” on several items. Two items were removed as they related to inter-departmental conflict which was not relevant to the scale of organisation in this study.

Three focus groups (n = 8, n = 10, n = 9, respectively) were conducted with food and beverage employees in an attempt to establish whether any additional concepts not identified by Jones and James (1979) would be relevant for this project. In addition an in-depth interview was conducted with the owner of an employment agency which specialises in the provision of casual employees to food and beverage establishments. This resulted in the identification of several aspects of scheduling (or “rostering”) as potentially being relevant to the organisational climate in the small business of this study. Ten new items relating to scheduling were incorporated into the instrument bringing the total number of climate items to 78. Employees were asked to respond to each item on a 7-point Likert-type scale; strongly disagree (1), disagree (2), tend to disagree (3), unsure (4), tend to agree (5), agree (6), and strongly agree (7).
Procedure

At each establishment a convenient time was arranged with the owner for the researcher to distribute the questionnaires and information sheets. The employees filled in the questionnaires at a time that was convenient to them. Extra questionnaires and information sheets were left at each establishment to be available to employees not present at the time. Once completed, the questionnaires were returned to a sealed box. The sealed box was collected by the researcher two weeks after the distribution of questionnaires.

Results

Identifying Principal Components

A PCA followed by a varimax rotation, was conducted on the 78 items of the responses from the 316 employees. Data met criteria for factor analysis: The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO = .937) was greater than .6, and Bartlett’s Test of Sphericity was significant ($\chi^2$ (d.f. = 3003) = 1,8271.06, $p < .0005$); with communalities ranging from .57 to .82 (Manning & Munro, 2007). According to Tabachnick and Fidell (1996), the number of components expected to be extracted by PCA lies in the range of K/3 to K/5 (where K is the number of variables), which in this case led to the theoretical expectation of between 15.6 and 26 components. The analysis extracted 15 components with eigenvalues greater than unity, accounting for 68.65% of the total variance. Given the number of items, this represented a good solution.

Following the procedures described by Manning and Munro (2007), examination of the factor loadings revealed that seven of the 15 components extracted were potentially interpretable. Component 1 accounted for 13.09% of the variance. The item with the largest loading on Component 1 was ‘My supervisor is interested in listening to what I have to say’. Another item with a large loading on this component was ‘My supervisor offers new ideas for job related problems’. Given this pattern of marker variables, this component was labelled Owner facilitation and support.

Component 2 accounted for 8.30% of the variance. The item with the largest loading was ‘My job requires a high level of skill and training’. Other items with large loadings were ‘Working in this business is beneficial to my career’, and ‘I have opportunities to learn worthwhile new skills and knowledge in my job’. Given this pattern of marker variables, this component was labelled Job training & standards.

Component 3 accounted for 7.59% of the variance. The item with the largest loading was ‘Communication is hindered by following chain of command rules’. Other items with large loadings were ‘The way my workgroup is organised hinders the efficient conduct of work’, and ‘Things in this business seem to happen contrary to rules and regulations’. Given this pattern of marker variables, this component was labelled Regulations organisation & pressure.

Component 4 accounted for 6.24% of the variance. The item with the largest loading was ‘Rosters are efficiently designed to respond to the needs of this business’. Other items with large loadings were ‘In this business, rostering takes into account the needs of employees,’ and ‘I am given adequate notice of changes to rosters.’ Given this pattern of marker variables, this component was labelled Scheduling.

Component 5 accounted for 5.93% of the variance. The item with the largest loading was ‘In this business, staff members generally trust their supervisors’. Other items with large loadings were ‘A spirit of co-operation exists in my work group,’ and ‘A friendly atmosphere prevails among most of the members of my work group’. Given this pattern of
marker variables, this component was labelled *Workgroup cooperation, friendliness & esprit*.

Component 6 accounted for 3.76% of the variance. The item with the largest loading was ‘There is conflict (rivalry and hostility) between my workgroup and other workgroups in this business.’ The next largest loading was ‘There is friction in my work group’. Given this pattern of marker variables, this component was labelled *Friction & conflict*.

Component 7 accounted for 3.76% of the variance. The item with the largest loading was ‘My supervisor emphasises high standards of performance’. The next largest loading was ‘The objectives of this business are clearly defined’. Given this pattern of marker variables, this component was labelled *Standards & objectives*.

**Developing the Psychological Scale for Small Business**

The results of the principal component analysis were used to guide the development of the instrument. This new instrument comprises seven subscales, corresponding to each of the climate dimensions identified in the PCA reported above and a total scale measure, *Global climate* (Table 2).

Following the scale reliability procedures described by Manning and Munro (2007), for each respondent, the mean across the 15 items with their principal loadings on Component 1 was calculated to form a new variable representing *Owner facilitation & support*. Item-to-total correlations and inter-item correlations were calculated. Using the criteria presented by Hair, Anderson, Tatham, and Black (1998) all items were found to display item-to-total correlations greater than the criterion of .50 and inter-item correlations greater than the criterion of .30. PCA was performed on the 15 items to ensure whether they could be considered to measure a single underlying construct. Only one component was extracted with an eigenvalue greater than unity and so unidimensionality was assumed. All items displayed loadings greater than the minimum criterion of .50 (Hair et al. 1998). Reliability, as estimated by Cronbach’s coefficient alpha, for the 15 item scale was excellent (α = .95) and these 15 items provide the subscale measure *Owner facilitation & support*.
Table 2
Principal component analysis and scale reliability results for the Psychological Climate Scale for Small Business (n = 316).

<table>
<thead>
<tr>
<th>Scale</th>
<th>Total no. items</th>
<th>% of variance</th>
<th>Alpha</th>
<th>Minimum item-total correlation</th>
<th>Marker items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner facilitation &amp; support</td>
<td>15</td>
<td>13.09%</td>
<td>0.947</td>
<td>0.593</td>
<td>My supervisor is interested in listening to what I have to say</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>My supervisor offers new ideas for job related problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>My job requires a high level of skill and training</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Working in this business is beneficial to my career</td>
</tr>
<tr>
<td>Job training &amp; standards</td>
<td>9</td>
<td>8.30%</td>
<td>0.897</td>
<td>0.564</td>
<td>The way my workgroup is organised hinders the efficient conduct of work</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Things in this business seem to happen contrary to rules and regulations</td>
</tr>
<tr>
<td>Regulations organisation &amp; pressure</td>
<td>10</td>
<td>7.59%</td>
<td>0.894</td>
<td>0.567</td>
<td>Rosters are efficiently designed to respond to the needs of this business</td>
</tr>
<tr>
<td>Scheduling</td>
<td>5</td>
<td>6.24%</td>
<td>0.845</td>
<td>0.552</td>
<td>In this business, rostering takes into account the needs of employees</td>
</tr>
<tr>
<td>Workgroup cooperation, friendliness &amp; esprit</td>
<td>6</td>
<td>5.93%</td>
<td>0.888</td>
<td>0.633</td>
<td>In this business, staff members generally trust their supervisors</td>
</tr>
<tr>
<td>Friction &amp; conflict</td>
<td>4</td>
<td>3.76%</td>
<td>0.770</td>
<td>0.562</td>
<td>There is conflict (rivalry and hostility) between my workgroup and other</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>workgroups in this business</td>
</tr>
<tr>
<td>Standards &amp; objectives</td>
<td>5</td>
<td>3.76%</td>
<td>0.740</td>
<td>0.418</td>
<td>There is friction in my work group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>My supervisor emphasises high standards of performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The objectives of this business are clearly defined</td>
</tr>
<tr>
<td>Global Climate</td>
<td>54</td>
<td>-</td>
<td>0.969</td>
<td>0.439</td>
<td>All items</td>
</tr>
</tbody>
</table>

Note Alpha = Cronbach's coefficient alpha.
Psychological climate subscale scores are calculated as the mean score across the items comprising the subscale and the full-scale measure, Global Climate, is calculated as the mean score across all 54 items of the climate subscales.

For each respondent, the mean across the nine items with their principal loadings on Component 2 was calculated to form a new variable representing **Job training & standards**. All items displayed item-to-total and inter-item correlations greater than their criteria. PCA on the nine items extracted only one component and so unidimensionality was assumed, and all items displayed loadings greater than .50. Reliability of the nine item scale was excellent (α = .90) and provides the subscale measure **Job training & standards**.

For each respondent, the mean across the 10 items with their principal loadings on Component 3 was calculated to form a new variable representing **Regulations organisation & pressure**. All items displayed item-to-total and inter-item correlations greater than their criteria. PCA on the 10 items extracted only one component and so unidimensionality was assumed, and all items displayed loadings greater than .50. Reliability of the 10 item scale was excellent (α = .89) and provides the subscale measure **Regulations organisation & pressure**.

For each respondent, the mean across the seven items with their principal loadings on Component 4 was calculated to form a new variable representing **Scheduling**. All items
displayed item-to-total and inter-item correlations greater than their criteria. PCA was performed on the seven items extracted two components and so unidimensionality could not be assumed. Two items displayed their largest loading on Component 2 of this analysis. A new variable was calculated with these two items excluded. For these five items, item-to-total correlations and inter-item correlations were greater than their criteria. PCA on the five items extracted only one component and so unidimensionality was assumed, and all five items displayed loadings greater than .50. Reliability of the five item scale was good (α = .85) and provides the subscale measure Scheduling.

For each respondent, the mean across the 10 items with their principal loadings on Component 5 was calculated to form a new variable representing Workgroup cooperation, friendliness & esprit. All items displayed item-to-total and inter-item correlations greater than their criteria. PCA on the 10 items extracted only one component and so unidimensionality could be assumed. Examination of the item content, however, revealed that while leading marker items tended to sensibly belong together (e.g. ‘In this business, staff members generally trust their supervisors’, ‘A spirit of co-operation exists in my work group’, and ‘A friendly atmosphere prevails among most of the members of my work group’) other items, although mathematically associated, did not appear to be conceptually associated with the concept of Workgroup cooperation, friendliness & esprit. For this reason four items were removed from the set (‘My job responsibilities are clearly defined’, ‘Opportunities for independent thought and action exist in my job’, ‘I have opportunities to complete the work I start’, and ‘The procedures of my work are kept up-to-date’.) A new variable was calculated with these four items excluded. For these six items, item-to-total correlations and inter-item correlations were greater than their criteria. PCA on the six items extracted only one component and so unidimensionality was assumed, and all six items displayed loadings greater than .50. Reliability of the six item scale was excellent (α = .89) and provides the subscale measure Workgroup cooperation, friendliness & esprit.

For each respondent, the mean across the four items with their principal loadings on Component 6 was calculated to form a new variable representing Friction & conflict. All items displayed item-to-total and inter-item correlations greater than their criteria. PCA performed on the four items extracted one component and so unidimensionality was assumed, and all items displayed loadings greater than .50. Reliability of the four item scale was acceptable (α = .77) and provides the subscale measure Friction & conflict.

For each respondent, the mean across the five items with their principal loadings on Component 7 was calculated to form a new variable representing Standards & objectives. All items were displayed item-to-total and inter-item correlations greater than their criteria. PCA performed on the five items extracted one component and so unidimensionality was assumed, and all items displayed loadings greater than the criterion. Reliability of the five item scale was acceptable (α = .74) and provides the subscale measure Standards & objectives.

In accord with Davidson et al. (2001) a full-scale measure was also calculated comprising the mean of the 54 items used to construct the seven subscales. This scale was labelled Global climate and displayed excellent reliability (α = .97).

**Measuring Variation in Climate Dimensions between Establishments**

PCA of responses of the 316 employees revealed seven interpretable dimensions of organisational climate relevant to employees of these small service businesses. Seven subscales, and a full-scale measure, were created which displayed acceptable to excellent reliability and form the new instrument. Table 3 shows the mean, standard deviation, minimum and maximum value, and range for each of the subscales and for the total scale, Global climate, across the sample of 316 employees. Scores that are produced by averaging
across Likert-type items with possible values of 1 to 7 have a theoretical maximum range of 6.

**Table 3.**
*Descriptive statistics at employee level and establishment level of scores on the Psychological Climate Scale for Small Business.*

<table>
<thead>
<tr>
<th>Climate Scale</th>
<th>Employee level (n = 316)</th>
<th>Establishment level (n = 52)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>Owner facilitation &amp; support</td>
<td>2.07</td>
<td>7.00</td>
</tr>
<tr>
<td>Job training &amp; standards</td>
<td>2.44</td>
<td>7.00</td>
</tr>
<tr>
<td>Regulations organisation &amp; pressure</td>
<td>1.60</td>
<td>7.00</td>
</tr>
<tr>
<td>Scheduling</td>
<td>1.20</td>
<td>7.00</td>
</tr>
<tr>
<td>Workgroup cooperation, friendliness &amp; esprit</td>
<td>1.30</td>
<td>4.20</td>
</tr>
<tr>
<td>Friction &amp; conflict</td>
<td>2.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Standards &amp; objectives</td>
<td>3.40</td>
<td>7.00</td>
</tr>
<tr>
<td>Global Climate</td>
<td>2.37</td>
<td>6.98</td>
</tr>
</tbody>
</table>

Table 3 shows the scales display a good range of variation in values with the smallest range being 4.56 for *Job training & standards*, and the largest (almost reaching the theoretical maximum of 6) being 5.8 for *Scheduling*. The degree of variation between employees seen in the climate scale scores is gratifying because it indicates the instrument is a potentially useful tool for measuring the workplace perceptions of individual employees; i.e, their psychological climate (Jones & James 1979). To be potentially useful in organisational research, however, it is necessary that these scores demonstrate variation not only between individual employees but also, when aggregated, demonstrate variation between establishments. To investigate this, the mean, standard deviation, minimum and maximum value, and range on each subscale and on the full-scale Global climate measure was calculated for each of the 52 establishments. Details of the distributions of these new aggregated variables are presented in Table 3.

As expected, the range of values of the 52 group means for each subscale is less than that found for individual employees. Despite this, considerable variation is found between the 52 establishments. A set of one-way analyses of variance was conducted to evaluate whether these ranges represented significantly different levels of each climate dimension across the establishments. Given the small number of employees in some establishments, comparisons were limited to establishments with 8 or more employees. This criterion resulted in a subsample of 149 employees of 14 establishments. Table 4 provides a summary of the results of these analyses.
Table 4.
Results of analyses of variance comparing mean scores on the 7 subscales and Global climate scale of the Psychological Climate Scale for Small Business across establishments with 8 or more employees.

<table>
<thead>
<tr>
<th></th>
<th>Between SS</th>
<th>Within SS</th>
<th>Total SS</th>
<th>F</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner facilitation &amp; support</td>
<td>36.39</td>
<td>57.52</td>
<td>93.91</td>
<td>6.57</td>
<td>0.000</td>
</tr>
<tr>
<td>Job training &amp; standards</td>
<td>51.55</td>
<td>73.77</td>
<td>125.32</td>
<td>7.26</td>
<td>0.000</td>
</tr>
<tr>
<td>Regulations organisation &amp; pressure</td>
<td>72.06</td>
<td>128.38</td>
<td>200.44</td>
<td>5.83</td>
<td>0.000</td>
</tr>
<tr>
<td>Scheduling</td>
<td>22.05</td>
<td>71.40</td>
<td>93.45</td>
<td>3.21</td>
<td>0.000</td>
</tr>
<tr>
<td>Workgroup cooperation, friendliness &amp; esprit</td>
<td>11.74</td>
<td>15.38</td>
<td>27.12</td>
<td>7.93</td>
<td>0.000</td>
</tr>
<tr>
<td>Friction &amp; conflict</td>
<td>50.78</td>
<td>110.80</td>
<td>161.58</td>
<td>4.76</td>
<td>0.000</td>
</tr>
<tr>
<td>Standards &amp; objectives</td>
<td>31.10</td>
<td>49.50</td>
<td>80.60</td>
<td>6.52</td>
<td>0.000</td>
</tr>
<tr>
<td>Global Climate</td>
<td>34.42</td>
<td>40.51</td>
<td>74.93</td>
<td>8.82</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Note. SS = sums of squares

Applying a Bonferroni correction for multiple comparisons (Howell (2007) the alpha level was adjusted from .05 to .00625. Significant differences in the means on each subscale were found across the 14 enterprises in this sub-sample. Similarly, significant variation in the means on each subscale was found between the 39 enterprises with 4 or more employees. The same pattern of results was also found when comparisons were made between establishments using Kruskal-Wallis non-parametric analysis (Manning & Munro 2007).

Discussion

Although organisational climate has been shown to display significant links to employee turnover intention, employee perception of customer satisfaction, and financial performance in large service organisations, no corresponding research has been conducted in small businesses. This study represents the first attempt to identify the dimensions of climate relevant to small service businesses, and the first development of a climate scale appropriate for use with small business.

Applying PCA to the responses of these small business employees revealed seven interpretable underlying dimensions of organisational climate. These dimensions accounted for 48.67% of the variance. This is similar to other reports of instrument development and is approximately the same amount of variance that Davidson et al. (2001) described in their study of climate dimensions in four- and five-star hotels.

The PCA results reported in the current study support the claim by Manning et al. (2004) that climate measures be 'developed from samples of respondents who are representative of the industry to which it will be ultimately applied' (p. 4), although they go somewhat further and serve to argue for instruments to be also mindfully developed in terms of the scale of the target organisations. Overall, the pattern of climate dimensions identified are more similar to those previously identified for large tourism and hospitality organisations (Davidson et al. 2001; Manning et al. 2004) than for military (Jones & James 1979) or municipal (Ryder & Southey 1990) samples. The dimensions did, however, display significant differences to those described for large organisations and so supports the notion that climate measures should be developed for different scales of enterprise.
The dimension explaining the greatest proportion of variance in the current study was *Owner facilitation & support*. This dimension is similar to the dimensions labelled *Leader facilitation and support* by Davidson et al. (2001) and Ryder and Southey (1990) that accounted for the greatest proportion of variance in both of those studies. Jones and James (1979) identified a similar factor but found that it accounted for only the third largest proportion of variance in their sample. This pattern across studies serves to reinforce Davidson et al.’s (2001) claim that different types of organisation will ‘differentially exhibit variation within particular dimensions’ (p. 446). Owner, or leader, facilitation and support in both large and small hospitality enterprises would appear to explain greater variation in psychological climate than does the same dimension in military samples such as that used in the original development of the PCQ.

The second dimension identified here was labelled *Job training & standards*. This dimension was similar to that labelled *Job standards* by Jones and James (1979) and Davidson et al. (2001).

The third dimension was labelled *Regulations organisation & pressure*. This was similar to that similarly labelled by Davidson (2001) and had some overlap with the factor identified as *Conflict and pressure* by Ryder and Southey (1990).

The fourth dimension found in this study, *Scheduling*, had not been identified in earlier studies. It is possible that this dimension is uniquely relevant to small business. However, as it was not considered as a possible dimension in earlier studies items relating to scheduling were not included in the battery of items used to develop previous instruments it could not emerge as a factor. Its appearance here further underlines the importance of considering content validity in the development of new instruments – in particular, ensuring that respondents are given a broad range of items in the development of the instrument. In the current study, inclusion of items relating to issues surrounding scheduling came about through the focus groups conducted with representatives of the population to be studied. This is a strategy that might well be considered before undertaking any climate research.

The fifth dimension described here was labelled *Workgroup cooperation, friendliness & esprit*. A similar dimension was identified in all three previous studies – which studies are you referring to here? In the current study, however, a number of items relating to the owner also loaded onto this component. Given the size of the organisations in this sample it is not surprising that owners are both perceived as leaders and also seen as members of the workgroup.

The sixth component extracted in this study was labelled *Friction & conflict*, and the seventh component was labelled *Standards and objectives*. These two dimensions do not appear to map directly onto dimensions described in earlier studies and this may well be due to the size of the organisations under investigation. It might be that in small business ‘there is no place to hide’, and individuals are ‘forced’ to interact thereby making it more difficult to reduce conflict and friction than may be the case in larger organisations. In the case of *Standards and objectives* large organisations often have in place clear job descriptions and objectives whereas in small business employees are often required to perform many duties across a variety of situations. This may well lead to a certain ambiguity with regards to job requirements and a perception by employees of unrealistic expectations being placed on them.

The identification of these seven dimensions fulfils the first aim of this study which was to identify the climate dimensions relevant to small service business.
The second aim of this study was to develop a multi-scale instrument specifically designed for use in small businesses. To that end, 54 items were used to operationalise each of the seven dimensions as variables, and, following the procedures of Davidson et al. (2001), an eighth variable, labelled *Global climate*, was created to provide an overall organisational climate measure. Reliability of each of the eight scales ranged from acceptable to excellent, and considerable variation between employees was found for each of the subscales. For a climate instrument to be potentially useful, however, values need to significantly vary not only between employees, but also between organisations when scores are aggregated at the group level. When scores were so aggregated, analyses revealed considerable, and statistically significant, variation to exist between establishments on each of the eight scales. This result supports the notion that the scale described here potentially provides a useful tool for use in organisational studies and so fulfilled the third aim of this study.

A potential limitation of this study was that it was constrained within a limited geographical region within a particular cultural setting and this may limit generalisation of the findings to organisations located elsewhere. An examination of the pattern of dimensions across the studies using the 35 *a priori* concepts identified by Jones and James (1979), however, provides some support for the notion of generalisability. Although the present study and those of Davidson et al. (2001) and Ryder and Southey (1990) were all carried out with Australian samples, there is no evidence of a ‘cultural divide’ between these three studies and that of the U.S. sample of Jones and James (1979). Davidson et al. (2001), for example, argue the climate dimensions for their sample ‘more closely resemble those described for a U.S. sample by Jones and James (1979) than they do for the Australian sample described by Ryder and Southey’ (p. 458). And the results of this study most closely resemble those of Davidson et al. (2001), despite displaying considerable differences that are understandable in terms of the scale of organisation investigated here.

In conclusion, this study represents the first attempt to identify the psychological climate dimensions relevant to small service businesses, and presents the development of the first climate instrument specifically tailored for such enterprises. Given the established capacity of measures on other climate instruments, such as the THOCS, to explain significant proportions of variation in several organisational outcome measures of large organisations, the instrument developed in the current study has a similar potential to explain significant proportions of variation in organisational outcome measures of small businesses.
Reference List


