Teaching psychology in Australia: Does class attendance matter for performance?

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Abstract

Objective: The value of course attendance is well documented, and has been linked to improved performance in the past. The current study aimed to add to this body of knowledge by examining a robust sample of students (six cohorts across two content domains) within the context of psychology undergraduate courses and specifically within Australian universities. To date, little data is available focusing on the issue of class attendance for psychology students in Australia.

Method: Data were collected from students during classes using paper and pencil questionnaires in which previous grades and attendance were recorded along with student number. Student number was subsequently matched to observed final grades which were recorded, before the student number was deleted to provide a de-identified data set.

Results: Using hierarchical linear modelling we found that course attendance was positively related to objective performance, providing additional findings to bolster evidence for the relationship between course attendance and objective performance while controlling for self-reported past academic performance. Furthermore, we did not find any significant variance in this relationship across course content, attesting to the robust nature of the link between class attendance and performance. Conclusion: Our data pre-date the major innovations in online teaching of the last few years, but the findings provide an important baseline and arguably have practical implications for the teaching of psychology within Australian universities.

Key words: Australian universities, class attendance, grade performance, learning, psychology course, undergraduate teaching

With the ever increasing availability of online learning formats, understanding the relationship between class attendance and performance is of critical importance. Although remote methods of learning are becoming more normative, there is abundant evidence demonstrating that classroom environments were and remain important predictors of student success (Credé, Roch, & Kiesczynka, 2010). There is ample evidence for this link from disciplines such as economics (e.g., Cohn & Johnson, 2006); however, there has been comparatively little work focusing on psychology (although see Gunn, 1993; Thatcher, Fridjhon, & Cockcroft, 2007) and even less within the Australian context. As the development of online learning paradigms allow students to access course content in their own time and in an increasingly engaging format, it is critical to know whether these innovations have reduced the importance of class attendance. Here, we provide a robust analysis of the value of class attendance at a time when new online learning formats were in their infancy. Our aim, therefore, was to provide a benchmark for the strength of the relationship between class attendance and performance, against which these new innovations can be assessed.

To achieve this aim, we investigated the relationship between attendance and performance across six cohorts of students within Australia. Furthermore, our sample extended across two different types of course content (statistics vs social theory), allowing us to examine whether any relationship between class attendance and performance remained constant across these different content areas.

Class attendance and course performance

There has been a strong focus on the value of course attendance for improving course outcomes within tertiary education (Credé et al., 2010; Romer, 1993). Evidence suggests that class attendance is important in the domains of health science (Jenne, 1973), sociology (Day, 1994), political science (Tiruneh, 2007), economics (Cohn & Johnson, 2006; Durden & Ellis, 1995; Stanca, 2006), and psychology (Gunn, 1993; Thatcher et al., 2007). Different methods have demonstrated the causal nature of this relationship—by testing different models (Jones, 1984), using randomised experimental procedures (Chen & Lin, 2008), and drawing on panel data (Rodgers, 2001). Universities will sometimes
require class attendance as part of student charters, and indeed, enforcing class attendance has been demonstrated to not only reduce absenteeism, but to improve learning outcomes (Credé et al., 2010; Marburger, 2006).

The relationship between class attendance and performance is apparent even after controlling for other factors. For example, Romer (1993) examined the relative impact of previous grades, finding that attendance was still a significant unique predictor of performance in an economics course. Devadoss and Foltz (1996) compared attendance with other factors such as student motivation and aptitude, teaching styles, and various course factors. Course attendance continued to make an independent contribution to performance. Even accounting for hours of study time did not eliminate the relationship between attendance and performance (Park & Kerr, 1990; although see Douglas & Sulock, 1995). Using panel data, Rodgers (2001) also found that class attendance influenced performance even after controlling for the effect of student motivation.

The relationship between class attendance and performance remains robust when remote methods of learning are made available. For example, Nyamapfene (2010) found that second year electronics engineering students performed better when they attended classes, even though online notes were made freely available. Critically, the availability of online materials tends to be related to reduced class attendance, although somewhat paradoxically those materials also have a positive impact on student learning (Traphagan, Kucsera, & Kishi, 2010).

The available evidence indicates a robust relationship between class attendance and performance, a fact that has received substantive support from a recent meta-analysis by Credé et al. (2010), showing that class attendance is a better predictor of college grades than any other known predictor of academic performance. Nonetheless, there is only a modest amount of data reporting this relationship for psychology students (Gunn, 1993; Thatcher et al., 2007), and to our knowledge no previous studies have focused on the Australian context. Investigating this relationship within Australian classrooms is important and has immediate practical implications for course design and the teaching of psychology within Australian universities (see also, e.g., Karantzas et al., 2013). As online learning paradigms become increasingly popular, it is important to establish the magnitude of the relationship between class attendance and performance at a time when these new formats were only in their infancy. Specifically, for those who want to establish the efficacy of new online or remote learning formats in reducing the importance of class attendance, it is important to know what the nature of the relationship between class attendance and performance at a time when such materials were not widely available.

The present research

We drew on data extending across six cohorts of third year Australian psychology students. Data were drawn from classes taught in 2005–2011, broadly defined as social psychology theory classes, and statistics classes. We used hierarchical linear modelling to determine whether the relationship between class attendance and performance remained stable across varying class content (technical vs conceptual). In determining these relationships, we also controlled for past academic achievement. This research presents a comprehensive analysis of the relationship between attendance and grades—for 11 classes, across six cohorts of students, across two content areas—giving rise to a powerful test of the range and generalisability of the effect within the context of teaching psychology in Australia.

All courses were taught by the same instructor (the first author), who made it a habit to urge the students to attend class in the first lecture of the year; despite this sage advice, attendance tended to fall after the first 2 or 3 weeks, and often fell below an estimated 50% by the final half of the semester. In both courses, there was structural support provided to students who missed class: detailed lecture slides were made available online before the lecture and remained available online until after the final exam; audio recordings of the lectures were sometimes also made available online.

METHOD

Participants

Participants were 685 psychology students enrolled in third year psychology courses in an Australian university. These included courses focusing on social psychological theory (social cognition and intergroup relations; n = 315) and a course focusing on statistical methods (n = 370). No specific age and gender data are available; however, at the university in question, these courses are generally comprised 70–80% women with a median age of 20 years, with the majority (over 70%) from a European-Australian background. Data were collected across six different years, from 2005 to 2011.

Procedure

Data collection involved providing students with a feedback form at various points through the semester, which required them, among other things, to indicate their attendance at lectures. They were informed that completion of the questionnaire was optional and that they would not be penalised for their responses. In the first instance, students were also asked to recall the grade they received in the second year equivalent course, allowing us to control for past academic achievement in the same domain as the current course.
Past grades were reported on a scale from 1 to 7. Observed final grades were measured from 0 to 100 marks, with values less than 50 representing a failure. The marks present a more fine-grained analysis than grades; however, they also are translated for students into grades from 1 to 7, as follows: marks of 0–29 (equivalent to grade of 1), 2%; marks of 30–39 (equivalent to grade of 2), 2%; 40–49 (equivalent to grade of 3), 6%; marks of 50–64 (equivalent to grade of 4), 31%; marks of 65–74 (equivalent to grade of 5), 28%; marks of 75–84 (equivalent to grade of 6), 22%, marks of 85–100 (equivalent to grade of 7), 10%. The distribution is relatively normal, with some possible restriction of range at the top end. We return to this point in the discussion. At the end of each semester-long course, students’ real final grades were recorded and linked with their self-report lecture attendance and past grade data, and then saved to an anonymised dataset that was combined with other classes’ results for the analyses below.

**Data analysis**

These data were hierarchical in nature, as students (level 1) are nested within the 11 class groups distributed across two kinds of classes (technical vs conceptual) and six different cohorts (year of data collection; the average number of valid students per class group was 62.27) (see Table 1). As such, the data were analysed using hierarchical linear modelling in the HLM software package (for an explanation of this technique and its advantages over other approaches to analyse hierarchical data, see Raudenbush & Bryk, 2002). On level 1, the outcome variable was students’ objective final mark, with students’ lecture attendance and grade received in the second year equivalent course were entered as predictors. On level 2, course type was entered as a dichotomous variable and its advantages over other approaches to analyse the data were analysed using hierarchical linear modelling in the HLM software package (for an explanation of this technique and its advantages over other approaches to analyse hierarchical data, see Raudenbush & Bryk, 2002). On level 1, the outcome variable was students’ objective final mark, with students’ lecture attendance and grade received in the second year equivalent course were entered as predictors. On level 2, course type was entered as a dichotomous variable (—5 = conceptual, .5 = technical) as well as course year. The interaction between course type and lecture attendance was also assessed. All predictors were included simultaneously in the one model, allowing us to assess the unique contribution of each predictor on students’ final mark without the complexity of a hierarchical model (if the interaction is omitted, the coefficients for the direct effects retain the same pattern of significance and directionality as that reported below). Level 1 predictors were group mean centred while level 2 predictors were grand mean centred.

**RESULTS**

From an empty model with no predictors, the intra-class correlation (i.e., the proportion of the total variance that is at the between-groups level) was .04. While this indicated that the majority of variance was at the between-student level, significant proportions of variance existed at both levels, justifying the use of HLM. The final estimates for the random effects (i.e., the variance components) of both the empty and predicted models are reported in Table 2.

The γ coefficients from the HLM analysis are reported in Table 3. As predicted, lecture attendance was significantly positively associated with final mark: more frequent attendance boosts grades. Importantly, this was independent of the effect of prior academic performance, which was also positively associated with final mark. There was no significant direct effect of year on final grade, but there was a direct effect of course type, such that higher grades were associated with courses focusing on social psychological theory compared with the courses focusing on statistical methods. Course type did not significantly moderate the association between lecture attendance and final mark, however.

Put simply, the results demonstrate that there is a significant association between attendance and higher grades

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**Table 1** Means and standard deviations for self-reported previous grades, observed final marks, and attendance at lectures for each group of students

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Self-reported Previous grade (1–7)</th>
<th>Observed final mark (0–100)</th>
<th>Attendance (0–11 lectures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stats1</td>
<td>5.34 (1.14)</td>
<td>67.30 (13.66)</td>
<td>3.88 (3.38)</td>
</tr>
<tr>
<td>Stats2</td>
<td>5.33 (1.09)</td>
<td>68.34 (12.48)</td>
<td>5.74 (3.10)</td>
</tr>
<tr>
<td>Stats3</td>
<td>5.24 (1.14)</td>
<td>67.82 (13.45)</td>
<td>5.01 (3.31)</td>
</tr>
<tr>
<td>Stats4</td>
<td>5.10 (1.48)</td>
<td>69.50 (11.92)</td>
<td>6.14 (3.61)</td>
</tr>
<tr>
<td>Stats5</td>
<td>5.34 (1.36)</td>
<td>69.88 (11.26)</td>
<td>4.41 (3.12)</td>
</tr>
<tr>
<td>Social1</td>
<td>5.56 (0.77)</td>
<td>76.15 (8.39)</td>
<td>7.44 (3.63)</td>
</tr>
<tr>
<td>Social2</td>
<td>4.89 (0.89)</td>
<td>69.56 (12.73)</td>
<td>7.67 (2.74)</td>
</tr>
<tr>
<td>Social3</td>
<td>5.26 (0.81)</td>
<td>67.95 (12.57)</td>
<td>5.50 (3.00)</td>
</tr>
<tr>
<td>Social4</td>
<td>5.35 (0.87)</td>
<td>64.95 (14.27)</td>
<td>5.51 (3.98)</td>
</tr>
<tr>
<td>Social5</td>
<td>5.61 (0.93)</td>
<td>73.39 (9.19)</td>
<td>4.67 (3.78)</td>
</tr>
<tr>
<td>Social6</td>
<td>5.77 (5.40)</td>
<td>72.14 (10.32)</td>
<td>1.28 (2.05)</td>
</tr>
</tbody>
</table>

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across the 11 classes, which is stable across the two types of courses. To repeat the results in a form that may be more familiar to readers, if the partial correlations between attendance and grades are calculated in each group, after controlling for students’ previous grades and their tendency to perform more strongly in social psychology electives than in statistics, these range from \(-.06\) to \(.59\), and meta-analysis suggests a population estimate of \(r = .17, z = 4.37, p < .001\).

**DISCUSSION**

The current study provides support to previous findings demonstrating the relationship between class attendance and performance. Importantly, our findings indicate that this relationship extends to the teaching of psychology within an Australian context. This relationship is independent of student’s prior grades and course content—the technical vs conceptual nature of course content. Using a hierarchical linear model in order to test the interaction of course- and student-level attributes, there was no evidence of the influence of content on the relationship between attendance and performance. This suggests that the relationship between final grades and attendance is a robust one. The current study also adds to a small but growing body of research demonstrating this relationship within the context of psychology (Gunn, 1993; Thatcher et al., 2007) and extends this to an Australian context (see also, Marsden, Carroll, & Neill, 2005).

Our findings overall support the robustness of the relationship between class attendance and performance. Critically, they show this at a time when the emergence of online learning platforms were still in their infancy, providing a benchmark for the relationship between class attendance and performance when the alternative was mostly just the provision of lecture slides online. Our data, therefore, offer a critical benchmark against which to compare studies examining the efficacy of new developments in the provision of online learning materials. Specifically, they allow for a direct comparison of the magnitude of the relationship between class attendance and performance in future research, which will provide insight into whether new technologies and more engaging online learning environments are in fact reducing the importance of class attendance for performance.

Some limitations must be acknowledged in relation to these data in their use as a benchmark for future studies. First, the data were collected opportunistically, without consideration of mediating and moderating variables (cf., Wilson-Doenges & Gurung, 2013). Similarly, there is little information about students’ demographic characteristics (age, gender) or whether they did or did not access online materials. It should also be noted that there was some chance that each of the two courses were not independent groups of students, and in some cases the same students may have attended both classes (or failed a course and repeated it again in a future year). In contrast, strengths of the data include strong power, clear replication, and appropriate analyses controlling for dependencies in the data (Wilson-Doenges & Gurung, 2013). It is also a strength of the analysis that observed final grades were recorded for the students, but it should be acknowledged as a limitation that there may have been a small restriction of range occasioned by the low failure rate (only 10% of students scoring marks of 49 or below), which could reduce the power of the analyses to detect effects. Thus, the associations observed in the present data might be stronger with more rigorous assessment.

Finally, our data did not allow us to examine what mechanisms may be underlying our effects. Although the link between class attendance and performance is robust across a diverse range of contexts, the exact reasons for why class attendance increases performance are perhaps less often acknowledged. A number of factors may have contributed to the observed effects, such as the benefits of spaced versus massed learning (Cepeda, Pashler, Vul, Wixted, & Rohrer, 2006; Goode, Geraci, & Roediger, 2008; Rohrer & Taylor, 2007). Another limitation of our data is that we were not able to rule out potential competing factors such as increased motivation. Nonetheless, previous research has demonstrated that the benefits of class attendance cannot be accounted for by motivation or hours of study time (Devadoss & Foltz, 1996; Park & Kerr, 1990; Rodgers, 2001) and that class attendance is the most powerful predictor of performance compared with all other known predictors (Credé et al., 2010).

Together the data make an important contribution to the Australian scholarship of teaching and learning by confirming the relationship between class attendance and grades in the context of undergraduate Australian psychology, at a time when new developments in the provision of online supporting materials were still in their infancy. The effect is small, but in an era when both students and administrators seem increasingly willing to consider face-to-face attendance at lectures valueless, it is worth underlining. It is tempting to outsource the classroom to remote and convenient contexts; however, any such move should carefully take account of the repeatedly observed robust relationship between the experience of being inside a classroom and course performance. Where lectures do move online, as in the plethora of new recorded, ‘flipped’ classroom and MOOC (massive open online course) models, increased student attrition has been documented (e.g., Traphagan et al., 2010) as well as impaired learning outcomes (Nyamapfene, 2010). Yet as Traphagan and colleagues also document, online materials and classes are increasingly demanded by students and
provide opportunities to new generations of students who might not otherwise access university at all. Moreover, not all in-person attendance is equally engaging or beneficial for students, as is well known (e.g., Dunn, Saville, Baker, & Marek, 2013; Karantzas et al., 2013). Successful learning and high satisfaction have been shown with online lecture provision (e.g., McCredden & Baldock, 2011), and these seem increasingly popular with administrators as well. Thus, exploring the moderators of the relationship between attendance and performance in the digital era will be an important direction of future research.

NOTE

1. Table 2 presents unstandardised results, as is common in HLM and as is appropriate given the meaningful units (years, lectures attended, previous grades). However, for purposes of comparison, it may be noted that if the variables are standardised and the analyses are re-run the coefficients (and standard errors) are as follows: course type = −.14 (.06), p = .040; course year = .06 (.04), p = .158, β1: lecture attendance = .16 (.04), p = .005; course type = .04 (.04), p = .341; β2: previous grade = .58 (.07), p < .001.

REFERENCES


