Achievement motive imagery in German schoolbooks: A pilot study testing McClelland's hypothesis

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ABSTRACT

McClelland [McClelland, D.C. (1961). \textit{The achieving society}. Princeton, NJ: Van Nostrand] observed that the amount of achievement imagery in children's books predicted the economic development of societies. He argued that achievement imagery is an indicator of a motivational climate, and when children grow up in a society that emphasizes the striving for achievement, they will be more economically productive later on. We tested McClelland's hypothesis by coding school textbooks for achievement imagery from two German federal states (Baden-Württemberg and Bremen) with pronounced differences in economic and educational conditions. As expected, the schoolbooks from the state with the more advantageous conditions contained more achievement imagery.

\section*{1. Introduction}

Federal states in Germany differ considerably in terms of their economic power. Generally speaking, in southern Germany, conditions are more favorable than in the north (Statistical offices of the Federation and the Länder, n.d.). For example the unemployment rate of the southern state of Baden-Württemberg is much lower than in the northern state of Bremen (5.5 vs. 14\% in 2007). Moreover, the Programme for International Student Assessment (PISA) studies revealed pronounced north–south differences in reading abilities, mathematics, and science skills (Prenzel et al., 2005). The difference persists even when macroeconomic factors, immigration rates etc. are controlled for. How, then, can such differences in educational achievement be explained?

1.1. McClelland's motivational macro-level analysis

In terms of McClelland’s (1961, 1985) work, one could argue that the answer may be found in motivational factors – namely the concern with the standard of excellence. In early work on achievement motivation, a clear relationship was found between high levels of achievement motivation (e.g. a strong concern for excellence), setting of achievement goals, and the economic success at the individual levels (see McClelland, 1985). Subsequently, McClelland also tried to help underdeveloped countries by offering achievement training for managers (McClelland & Winter, 1969). Particularly in India, training showed considerable effects, such as more individual business activities and a stimulation of the economy in the areas in which it took place. McClelland also saw clear relationships between people with a high need for achievement and what Max Weber (1905) called Protestant ethic. The Protestant ethic is based on the principles of thrift, discipline, hard work, and individualism in order to obtain possible salvation. According to Weber, this Protestant ethic fostered modern capitalism.

To test his hypothesis that the national level of achievement motivation (irrespective of the confessional background) would predict economic development, McClelland had to devise a measure of the “achievement motive” of whole societies. On an individual level, the achievement motive was measured with the Thematic Apperception Test (TAT; McClelland, Atkinson, Clark, & Lowell, 1953). In this instrument, research participants write imaginative stories about picture stimuli. The stories are then coded with a coding manual to assess the individual achievement motive (see method section, below). In principle, any kind of written text can be scored with this coding system. This is the approach that McClelland chose.

In McClelland's empirical analyses, representative textual material of different societies and time periods were scored. Results indicated, for example, that the achievement content of children's books from 21 nations in 1925 was predictive of their economic achievement in 1950 ($r = 0.46$; McClelland, 1961, p. 92). Indeed, the relationship between economic development and achievement
imagery could even be found for ancient Greece, medieval Spain and England, and Indian tribes. DeCharms and Moeller (1962) showed that in the period from 1810 to 1950, achievement imagery expressed in US school textbooks was closely associated with the drive for innovation as measured by the number of patents issued.

The coding of achievement motive imagery in text materials provided insights not only into the performance of nations; motivational imagery relating to power and affiliation was found to be predictive of whether countries entered into war (McClelland, 1975; Winter, 2000). Recent data presented by Pang and Schultheiss (2005) might allow further support for McClelland’s reasoning. In their study, the achievement motive was higher for a US sample than for a German sample. This result is consistent with the better state of the US economy relative to the German economy for the time period in which Pang and Schultheiss tested their samples.

1.2. Pilot study

In the present research, we built on McClelland’s idea that collective achievement motivation is associated with economic power. In our pilot study, we considered two federal states with pronounced differences in economic and educational achievement, Baden-Württemberg and Bremen. These two states do not differ in all respects of their economic power. For instance, the gross state product is only slightly higher in Baden-Württemberg. But as already mentioned, they do differ substantially in other indicators of economic power, such as their employment rates (see above) and PISA results (Baden-Württemberg at the top of the national ranking and Bremen at the lower end). Also, the public debts are much higher in Bremen, with investment per capita or capital stock being lower (Statistical offices of the Federation and the Länder, n.d.). In light of DeCharms and Moeller’s (1962) results, it is also interesting to note that they differ in the number of patents issued. For example, in 2006, Baden-Württemberg had 125 patent applications per 100,000 inhabitants, compared with only 21 for Bremen (German Patent and Trade Mark Office, 2006).

As textual material to determine the achievement imagery, school textbooks were used (German and mathematics). In line with McClelland’s reasoning, we expect achievement imagery in school textbooks to be more frequent in Baden-Württemberg than in Bremen. We expect no differences for the motive imagery in power and affiliation.

2. Method

2.1. Data collection

The Programme for International Student Assessment (PISA; begun in 2000 and repeated in 2003 and 2006) measures and compares students’ abilities in reading, mathematics and science. We adapted the selection of textbooks for evaluating achievement imagery to the PISA 2000 study, sending lists of available schoolbooks to the schools and asking them to mark which ones they used for the 9th grade in 1999/2000 (when PISA 2000 was conducted) and for the 2nd grade in 1992/1993 (when the PISA 2000 cohort was in the 2nd grade). Eighty-four elementary schools and 53 secondary schools in Bremen (70% and 77% of state schools in this state) as well as 113 elementary and 276 secondary schools in Baden-Württemberg (4.5% and 14% of state schools in this state) were contacted. Using this procedure, we obtained information from $N = 24$ schools from Bremen and $N = 27$ from Baden-Württemberg for the 2nd grade, and for the 9th grade $N = 21$ and $N = 115/123$ (German/math) schools, respectively. In total, $N = 195$ different schoolbooks were used, and only $N = 24$ of these were the same in both states. $N = 172$ of the books were available from the library at the University of Potsdam. The other $N = 23$ books were not analyzed, but none of these constituted the only book used in any of the schools.

2.2. Coding procedure

The schoolbooks were coded with the coding manual according to Winter’s (1994) Manual for Scoring Motive Imagery in Running Text. This scoring system has been validated and successfully used in various applications ranging from studies of speeches of political leaders (Spangler & House, 1991), the role of motives in conflict escalation (Winter, 2000), and the effects of motive–goal congruence on well-being (Brünstein, Schultheiss, & Grässmann, 1998) to experimental studies (Zurbriggen, 2000). The manual allows the coding of the achievement, power and affiliation imagery. According to the manual, an achievement imagery is a concern for attaining a standard of excellence. Such standards are expressed by mention of doing good, winning or competing, positive evaluation of success or negative evaluation of failure and of unique accomplishments. A power image is scored when a concern for having an impact is expressed (e.g. forceful actions). Affiliation is scored for establishing, maintaining or restoring friendly and positive relations to others or expressing sadness or negative feelings about separation and disruption.

Two coders coded the ten most widely used German and math textbooks (disagreements were resolved by discussion). The remaining textbooks were then coded by one coder. Both coders attained more than 85% agreement with the expert ratings contained in the Winter (1994) manual, and the interrater reliability for achievement, power and affiliation was over 90%. The coders were unaware of the federal states in which the schoolbooks were used. In the math books, only cohesive textual passages were coded (i.e. we excluded arithmetic problems, tables, figures and words not included in complete sentences). For the 2nd grade, only very few math books had cohesive textual passages. Therefore, our analyses of mathematics textbooks were limited to the 9th grade. For the German textbooks, not every page was scored and more frequently used textbooks were coded more intensively: textbooks used by more than 15 schools we coded every fifth page; between 10 and 15 schools every tenth page; 5–10 schools every twentieth page; and fewer than 5 schools every thirtieth page. The motive imagery was computed to the amount of imagery per 1000 words.

3. Results

For data analysis, each school was treated as a single case. If more than one book was used in a school, the mean motive imagery of the books was calculated. The means and standard deviations for both federal states for the 2nd and 9th grade are presented in Table 1. As noted above, the means for mathematics in the 2nd grade could not be obtained. We also present the results for the power and affiliation imageries to examine the specificity of the postulated achievement imagery difference.

As expected, achievement imagery was more prevalent in the schoolbooks from Baden-Württemberg than in those from Bremen. For German textbooks, significant differences between the federal states could be found in both the 2nd and 9th grade, being more pronounced in the 2nd grade ($t(124) = 3.50, p = 0.001$) and in the 9th grade ($t(134) = 123, p = 0.001$). The differences for the math schoolbooks were even stronger ($t(142) = 7.43, p = 0.001$). Thus, differences in achievement imagery in German and math schoolbooks support our hypotheses.

Also in line with our reasoning, differences in motive imagery were mostly restricted to the achievement domain. A marginally significant difference in the 9th grade German textbooks could
be found for power imagery, which was higher in Baden-Württemberg than in Bremen (see Table 1), \( t(134) = 1.88, p = 0.062 \).

4. Discussion

Based on previous studies, it was argued that differences in economic and school achievement (PISA) between federal states of Germany would correspond to the achievement imagery in school textbooks. As expected, achievement imagery in the textbooks of Baden-Württemberg (economically well-off and relatively good results in PISA) was more frequent than in Bremen (economically less well-off and poor results in PISA). This holds true for the German textbooks used at the time when the PISA cohort was in elementary school (schoolbooks of the 2nd grade in 1992/1993), as well as for the German and math textbooks at the time when PISA was conducted (schoolbooks in 9th grade in 1999/2000).

McClelland (1961) argued that the motivational climate in which children grow up will influence their achievement motive. This will later influence their (academic) achievement. The difference found in the achievement imaginations in the 2nd grade is in line with this explanation. The more pronounced achievement imagery in Baden-Württemberg schoolbooks indicates that society had a higher achievement concern when the children were in 2nd grade (2nd grade textbooks in 1992/1993). Later, this led to better test results in PISA 2000 (the children now in 9th grade), and we expect these children to be economically more productive in their post-school lives.

However, we also found marked differences in 9th grade schoolbooks at the testing time of PISA 2000. This allows a different interpretation of the results: the achievement imaginations activate achievement behavior. Evidence for such a causal effect was documented in a series of experiments by Bargh, Gollwitzer, Lee-Chai, Barndollar, and Trötschel (2001). When subjects read achievement-related words, they subsequently showed better achievement in word search puzzles (see also Engeser, Wendland, & Rheinberg, 2006). Thus, the differences in PISA might be explained by the differences in the achievement imagery of school textbooks. McClelland (1985) also reasoned that in modern societies, achievement striving leads to an immediate rise in productivity: due to “increased communication and transportation, motive changes should translate into social changes more rapidly” (p. 465). The parallel of achievement imagery and number of patents found by DeCharm and Moeller (1962) points in a similar direction (see also Beit-Hallahmi, 1980). Effects of motivational changes are more proximate but will take time – in modern society less time – to have widespread consequences for societies.

The data in our study render both explanations equally possible. Indeed, we believe that the two mechanisms go hand in hand. The motivational climate influences the need for achievement of an individual and therefore later influences achievement striving. This general concern has to be activated by situational factors such as reading achievement words.

One limitation of the study is that only small time periods were considered. Besides this, a replication of the study with material from further German federal states would be desirable. As a qualitative extension, it would be useful to understand more precisely the possible causal links between the achievement imagery and achievement. In particular, we wish (1) to learn more about the stability of the achievement imagery of schoolbooks and compare the achievement content with the development of the federal states (focusing on academic achievement of children like in PISA). (2) In order to test McClelland’s (1961), McClelland’s (1985) reasoning that schoolbooks are appropriate indicators of a society’s motivational climate, we would like to investigate whether or not analogous differences can also be found in texts that children read outside of school, especially children’s books. Finally, (3) we plan to test the additional explanation based on the results of Bargh et al. (2001) and Engeser et al. (2006) in the school-related contexts.

Beyond academic interest, the results of further research could point to possible educational interventions fostering academic achievement. Changing the motivational climate of a society would be beyond the scope of regular intervention programs. However, it might be partially possible to change the motivational climate of individual schools and relatively easy to increase achievement-related words in textbooks in order to foster academic achievement.

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References


Table 1

Mean amount of motive imagery according to federal state.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Achievement</th>
<th>Power</th>
<th>Affiliation</th>
<th>Achievement</th>
<th>Power</th>
<th>Affiliation</th>
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<tr>
<td>2nd</td>
<td>German</td>
<td>0.57</td>
<td>1.06</td>
<td>0.164</td>
<td>3.10</td>
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</tr>
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<td></td>
<td>Baden-Württemberg</td>
<td>0.31</td>
<td>0.76</td>
<td>0.16</td>
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</tr>
<tr>
<td>9th</td>
<td>German</td>
<td>1.83</td>
<td>1.78</td>
<td>0.001</td>
<td>0.39</td>
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</tr>
<tr>
<td></td>
<td>Baden-Württemberg</td>
<td>0.60</td>
<td>1.20</td>
<td>0.008</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < 0.10.

References


