



# Stronger Smarter Institute Research & Impact Footprinting

## Reading Review

### “Folk Belief Theory, the Rigor Gap and the Achievement Gap”

#### Stronger Smarter Meta-Strategy links:

1. Acknowledging, embracing and developing a positive sense of identity in schools → 2. →3. High Expectations Relationships → 4. →5.

This Reading Review provides a summary and review of a 2014 paper by Bruce Torff. Torff is based at Hofstra University in New York where he is a Professor in the Department of Teaching, Learning and Technology. He gained his PhD from Harvard University, and has published over 75 articles and books on various topics in educational psychology, cognitive-developmental psychology and teacher education. Torff has an interest in research on educators’ beliefs about learning and teaching. Torff’s paper analyses several research studies about teacher beliefs around curriculum for low-advantage and high-advantage students in the USA. He includes research projects undertaken by Torff and his colleagues over the period 2001 to 2006, as well as discussion of findings by other researchers.

While this research is based in the USA, we believe it has implications for disadvantaged and Indigenous students in Australia.

#### Contents of this Review

| Research mapping                                    | Page |
|---|------|
| ▶ The Rigor Gap                                     | 2    |
| ▶ The Research Question                             | 2    |
| ▶ Folk Belief Theory                                | 2    |
| ▶ The Research                                      | 4    |
| ▶ Facilitating belief change                        | 6    |
| <br>Stronger Smarter key insights                   |      |
| ▶ Summary of ‘Key Points’ from the Research Paper   | 8    |
| ▶ Stronger Smarter Recommendations and Provocations | 10   |

## The Rigor gap

Torff begins by looking at the theory around the suggestion that there is a 'rigor gap' in the level of curriculum provided to low-advantage students. Torff quotes Barton (2004) who gave 14 suggested causes for the low SES achievement gap. The practice of providing less rigorous curriculum to low-advantage students was at the top of this list. Torff says that several researchers since have argued that this rigor gap provides less opportunities for low-advantage students.

## The Research Question

The assumption being tested by Torff in this research is that educators are more inclined to support the use of rigorous curriculum for high-advantage students than for low-advantage students, and this is suppressing educational outcomes for low-advantage students. The research attempts to answer three research questions:

- ▶ To what extent do educators really hold such rigor gap beliefs?
- ▶ If they do hold these beliefs, are these beliefs problematic? In other words, is it possible that students do better when the curriculum is matched to their achievement – i.e. low-advantage students are given easier curriculum?
- ▶ If rigor gap beliefs do exist, what do we need to do to change them?

## Folk Belief theory

Torff describes his underlying premise as 'folk belief theory'. He explains that educators are socialised into certain beliefs about teaching and learning which provide the basis for best practice. A common folk belief is that low-advantage students are not ready for critical thinking skills. In this way, folk beliefs have a pervasive, but often hidden effect on schools. Torff describes folk belief theory as predicted on four assumptions.

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### Buckets of opportunity

Professor Chris Sarra, in his PhD (published as Sarra, 2011, p.68) takes a similar view with his model of 'buckets of opportunity.' Sarra explains the situation where historically Indigenous Australians have been afforded less opportunities than non-Indigenous Australians. In order to bring the buckets of opportunity to the same levels, this means providing additional support for Indigenous Australians for a period of time.

However, in education, if this support is in the form of remedial curriculum, then this will continue to keep the buckets of opportunity at different levels.

Sarra (2012) says that a core belief of the Stronger Smarter Philosophy and Approach is that that Indigenous children are 'worthy of a quality education'.

Torff's research helps to show what a 'quality education' should mean for all students.

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## The assumptions of folk belief theory

1.

### Socially-shared beliefs

People make sense of learning, teaching and thinking through culturally-provided cognitive tools.

The term 'folk psychology' has been used to describe this body of culturally-provided cognitive tools.

2.

### Rigorous curriculum is directed to high-advantage students

A particular folk-belief theory is that

- (a) students need to master the facts before they are ready for critical thinking,
- and
- (b) low-advantage students are not ready for critical thinking and need remedial programs to catch up

3.

### Impoverished pedagogy

The result is that teachers may favour (either tacitly or explicitly) a remedial curriculum that emphasises drilling the fundamentals and not engaging students in higher order thinking

4.

### Folk beliefs are resistant to change

Folk beliefs introduce a bias into the education system creating a culture that supports a pedagogy that provides low-advantage students with limited access to rigorous curriculum and instruction. Teacher's working in such a system will find that their beliefs are resistant to change.

The recent reports from TIMSS and PISA (see SSI Reading review), support the assumptions around folk belief. The results show that low-advantage students have lower self-esteem, self-belief, and don't value schooling because they don't see career opportunities, don't expect to go to university and don't see schooling as relevant to their lives or their culture. In this situation, providing students with low-CT activities – a 'catch-up, remedial curriculum' – will, in fact, reinforce the lack of student engagement, self-belief and self-esteem.

## The Research

Torff commences with a discussion of the research by looking at previous studies by Raudenbush, Rowan, & Cheong (1993) and Zohar et al (2001) looking at teacher beliefs around high and low critical thinking (CT) learning activities. These studies indicated that at least some teachers judged high-CT activities to be more appropriate for high-advantage student than low-advantage students.

Torff and Warburton (2005) designed the Critical Thinking Belief Appraisal (CTBA). This tool comprises a series of vignettes describing classroom activities in English, maths, science, social studies and languages other than English, divided equally between low-CT and high-CT activities

They undertook a sequence of five validation studies for the tool, and then put the tool to use in three studies to examine in-service teacher beliefs about high-CT and low-CT activities of high-advantage and low-advantage students. This 2005 study included 350 secondary teachers in over 100 schools in New York State and South Carolina.

### Findings of the 2005 study

The findings of the 2005 study are that teachers generally favour high-CT activities as preferable for learning. However, teachers still judged it appropriate that low-advantage students be given fewer high-CT activities than their high-advantage peers. These findings differ slightly from the previous two studies which suggested teachers thought low-CT activities were better for low-advantage students. Torff and Warburton's conclusion is that teachers thought that the high-CT activities were better for all students, but still gave low advantage students low-CT activities. Torff says this finding is consistent with folk belief theory.

We note that Torff's conclusions are confirmed by a Canadian study by Riley and Ungerleider (2012). Their study showed that factors such as race, class, and gender influence the decisions teachers make regarding students. They describe how teachers attributed certain factors to particular groups, such as Aboriginal students. These beliefs about students could positively or negatively influence the attributional interpretations the students have of their academic potential. In other words, a self-fulfilling prophecy was occurring. Riley and Ungerleider cite studies that suggest that while self-fulfilling prophecies in terms of effect size were relatively small, a teacher's belief regarding a student's potential could influence that student over several years from the initial point.

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### Socially-shared beliefs and underlying assumptions

Folk belief theory begins with the theoretical perspective known as 'cultural psychology'. Torff quotes Shweder (1991) who describes cultural psychology as '*the study of the way cultural traditions and social practices regulate, express and transform the human psyche*'.

This is closely aligned with Schein's (1992) view of culture which underlies the Stronger Smarter Approach. Schein talks about out-of-awareness underlying cultural assumptions as being those we do not have to consciously consider in order to perceive, think, feel, judge, and act.

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## Does this mean an impoverished curriculum?

Torff then goes on to ask the question whether just because teachers are giving low-advantage students low-CT activities, is this really an impoverished curriculum? Could it be that low-CT activities are actually more appropriate for low-advantage students? Torff's reasoning is that if low-CT activities are actually better for low-advantage students, it is likely that expert teachers – the teachers who are unlikely to hold beliefs that exacerbate educational problems such as the rigor gap – would produce CTBA data comparable to that of a randomly selected group of in-service teachers. However, if the in-service teachers' beliefs are impoverished – as folk belief theory predicts – their responses should be different.

This formed the basis for a 2006 study (Torff, 2006) that looked at 100 randomly selected in-service teachers and 92 expert teachers in New York State. The expert teachers were nominated as such by their principal or assistant principal. Teachers in the in-service group were picked randomly from 39 schools in similar socio-economic areas to the schools of the expert teachers.

The results of this study were:

### ***Experts were generally more supportive of high-CT activities than in-service teachers.***

- ▶ There was no difference between groups in the rating of high-CT activities for high-advantage students.
- ▶ Both experts and in-service produced a pedagogical-preference effect supporting high-CT over low-CT. However, the effect was 8 times stronger for experts than for in-service. In-service teachers provided higher ratings than expert teachers for low-CT activities for both high-advantage and low-advantage students.

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### Impoverished curriculum

An underlying folk-belief theory is that students need to master the facts before they are ready for critical thinking. This may result in an impoverished curriculum. Torff suggests this is consistent with Rosenthals & Jacobson's (1992) Pygmalian effect that students rise to the expectations set by teachers, administrators or parents. Torff says if this is true, an impoverished, remedial curriculum is set in low expectations and will not result in improvement in the achievement gap.

In Australia, this has been seen with the use of remedial literacy programs for Indigenous students as a way to 'catch them up.'

This aligns closely with the Institute's work on High-Expectations Relationships (SSI, 2014) which describes how underlying assumptions may impact on a belief in 'high expectations' and that educators need to understand their underlying assumptions (or their 'folk beliefs') first in order to truly enact high-expectations in the classroom

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### ***Experts were less enthusiastic about varying their used of high-CT and low-CT based on learner advantages.***

- ▶ Experts were considerably more likely to support high-CT activities for low-advantage students.
- ▶ Both groups rated high-CT and low-CT activities as being more effective with high-advantage students than with low-advantage – indicating that experts as well as in-service teachers produced the advantage effects from previous research (both Torff and others).

Torff concludes from this research that in-service teachers do support less rigorous pedagogy for low-advantage students, but that the expert teachers do not. He concludes, therefore that this does indeed suggest that low-CT activities do not constitute appropriate curriculum or instruction matched to students in need of remediation – rather the discrepancies point to impoverished teaching for low-advantage students.

The 2015 Trends in International Mathematics and Science Study (TIMSS) report shows there is an achievement gap depending on both the socio-economic background of the student and the school. Regardless of socioeconomic background, students enrolled in a school with high average socioeconomic background tend to perform at a higher level than students enrolled in a school with a low average socioeconomic background (See SSI Reading Review).

## Facilitating belief change

Torff goes on to suggest that if, as his research shows, folk belief theory does exist and the beliefs are resulting in impoverished curriculum, teacher education initiatives are needed to promote belief change. Folk belief theory predicts that changes over time will be small, if any, because socially-shared beliefs tend to be robust and resistant to change.

### Are folk beliefs hard to change?

Torff undertook a further study where they administered the CTBA to three groups

- ▶ in-service teachers with a minimum of five years' experience
- ▶ preservice teachers
- ▶ prospective teachers – those wanting to enter teaching, but have not yet started preservice education.

The results of these studies showed that all groups produced CTBA responses consistent with a rigor gap between high and low-advantage students. There was a small change in teacher beliefs about the use of different activities for different student

populations from the prospective teachers to preservice teachers. However, beyond that there was no evidence of change in beliefs between preservice and in-service teachers. Torff says the results indicated considerable stability of teachers' beliefs, consistent with folk belief theory that says these kinds of beliefs tend to be robust and resistant to change. This, in turn, makes the rigor gap and the achievement gap difficult to change.

## How do we facilitate belief change?

Torff looks at possible ways to change beliefs, based on literature and educational psychology focused on strategies for facilitating change in teachers' beliefs.

He begins by confirming that simply telling teachers what they ought to believe will not work – there is overwhelming evidence that people tend to tell researchers what they want to hear and later revert to what they previously believed.

Riley and Ungerleider's (2012) research also suggested that teachers are unlikely to change their behaviour unless they recognize there is a need for behavioural change. They note that teachers enter the profession to make a positive change, and if their sensibilities and beliefs are challenged as happens in some social justice programs, they may be inclined to reject the ideas altogether.

## Teacher reflection

Torff suggests that the preferred means to facilitate belief change is to encourage self-reflection. Teachers' beliefs about critical thinking are often tacitly and uncritically held and involve unexamined assumptions. Initiatives are therefore needed to encourage reflective thinking, shed light on beliefs, question beliefs, consider alternatives and draw conclusions about the best ways to move forward. Torff & Sessions (2006) undertook a study of 120 secondary social studies teachers in New York State to find out what teachers take into account when deciding what kind of teaching to use. Interviewees invoked 11 issues deemed to be relevant to classroom decision making:

- ▶ *Students level of prior knowledge*
- ▶ *Time constraints*
- ▶ *Influence of parents*
- ▶ *Influence of colleagues*
- ▶ *Students level of motivation*
- ▶ *Students level of ability*
- ▶ High-stakes test
- ▶ Influence of administrators
- ▶ Nature of the subject
- ▶ Classroom management
- ▶ Ease of assessment

The first six variables (italised above) were associated with statistically significant preferences for low-CT activities for low -advantage students. In other words, when teachers were making pedagogical choices for low-advantage students, they were influenced by

- ▶ Social environment – parents and colleagues
- ▶ Student characteristics – prior knowledge, motivation and ability
- ▶ School environment – time constraints.

### Strategies for self-reflection

Torff provides a set of four strategies that could be considered for encouraging teachers to engage in reflection.

- ▶ **Reflection on existing beliefs** – asking teachers to respond either verbally or in writing to questions or assignments designed to promote reflective thinking, for instance by keeping a reflective journal.
- ▶ **Reflection on case studies** – teachers are given scenarios of classroom situations and asked to analyse them.
- ▶ **Reflection on models of best practice** – teachers analyse and evaluate examples of best practice.
- ▶ **Reflection on curriculum design** – teachers create their own classroom activities along the models of best practices.



## Summary of Key Points

### **Out-of-awareness assumptions**

Torff concludes that problems as complex as the achievement gap usually stem from multiple causes. His research has shown that folk belief theory does exist where educators are socialised into a culture's beliefs about teaching and learning which provides the basis for best practice.



### **The rigor gap**

When a folk belief is that low-advantage students are not ready to manage high critical thinking (CT) activities, this results in a rigor gap. Torff's research shows that teachers are favouring low-CT activities for low-advantage students, even when they believe that high-CT activities are better for students overall.



### **A self-fulfilling prophecy**

Research with expert teachers shows that this less rigorous pedagogy is not appropriate for students in need of remedial work, but instead constitutes a watered down-curriculum and impoverished teaching for students who might be as challenged and engaged as high-advantage students. A self-fulfilling prophecy results. The rigor gap results in the achievement gap.



### **Etched in stone**

Folk beliefs, by their nature, being based on social-shared beliefs and underlying and out-of-awareness assumptions are hard to rewrite – they seem to be etched in stone.

## Stronger Smarter Recommendations and Provocations

- ▶ **Self-reflection and underlying beliefs:** The Institute's work offers considerable input into supporting self-reflection for educators. In Australia, we first need an understanding of the impact on our education systems of Terra Nullius education. We believe that the reasons the Stronger Smarter Leadership Program (SSLP) has been so successful are the activities that demand a high level of self-reflection and unpacking of underlying beliefs from participants, together with strategies that support participants to share these learnings with others back in their workplace. Torff's suggested case studies and reflective journals, while useful, will not reach this level of deep critical self-reflection, or be so successful in addressing the root cause of the rigor gap.
- ▶ **Watered-down curriculum:** The TIMSS and PISA research (see SSI Reading Review), shows that low-advantage students have lower self-esteem and self-belief than high-advantage students, and are less likely to value schooling because they don't see career opportunities, or don't expect to go to University. In other words, low-advantage students don't see the formal education offered by schools as relevant to their lives or their culture. In such a situation, providing students with 'catch-up' or remedial curriculum (low-CT activities) will simply reinforce these student beliefs. Favoring low-CT activities for low-advantage students not only results in a rigor gap, but may also exacerbate the problem by disengaging students further. This is particularly relevant for Australia's Indigenous students who are both more likely to be in the low-advantage group, and are more likely to benefit from an engaging and culturally-relevant curriculum.
- ▶ **Time constraints:** The factors that Torff suggests trigger the rigor gap deserve further consideration and unpacking. 'Time constraints' could result from a range of classroom dynamics. In Australia, this could perhaps be addressed by employing more Aboriginal Education Workers and supporting them to develop their roles in the classroom. Supporting teachers to build High-Expectations Relationships with students, may take time initially, but could save time throughout the school year.
- ▶ **Social environment:** Negative influences of colleagues based around deficit conversations (*don't waste your time with those students – it will never work*) at the school level that may discourage teachers from trying something different with their students. The Stronger Smarter Approach challenges educators to address deficit conversations.
- ▶ **The challenge:** We know that all educators believe in high expectations for all students. However, our work with educators in Australia supports Torff's research that out-of-awareness assumptions may get in the way of these high-expectations beliefs. We challenge educators to develop High-Expectations Relationships that truly enact high expectations in the classroom. At the same time, we challenge education systems to recognise the complexity of working with Indigenous education and disadvantaged students, reject the use of remedial curriculum as a 'quick fix, and support educators to bring high quality teaching strategies, with relevant and engaging curriculum

## Stronger Smarter Metastrategies and Approach

Torff's research-based study provides further support to the underlying theoretical basis for the Stronger Smarter Approach and Stronger Smarter Leadership Program. He states that taking aim at the beliefs underlying the rigor gap – addressing the root causes of the problem – has potential to help close the achievement gap. The Institute's work is based around exactly this. The Stronger Smarter Approach aims to bring Australia's out-of-awareness beliefs about Indigenous education in Australia into awareness. Until this happens, nothing can change.

### **Meta-strategy 3: High-Expectations Relationships**

In Australia, we know there is an achievement gap – the recent TIMSS and PISA research reports (see SSI Reading Review) have highlighted this once again. If you are Indigenous, come from a low-advantage background or go to a school in a low-advantage area, you are less likely to achieve.

We also know that historically in Australia there has been an opportunity gap. Many of the parents and grandparents of today's Indigenous school children had poor experiences of schooling.

The challenge for Australian education now is to ensure that this opportunity gap doesn't continue as a rigor gap. Our work on High-Expectations Relationships (Stronger Smarter Institute, 2014), supports educators to ensure that there is no rigor gap, and that high expectations beliefs are more than rhetoric but are enacted in classrooms.

### **Meta-strategy 1: Positive student identity**

Professor Sarra's work in Australia (Sarra, 2011, 2012) has shown the importance of a positive sense of identity for Indigenous students. Lewthwaite et al's (2015) work on Culturally-Responsive Pedagogies shows that learning experiences need to reflect, validate and promote students' culture and language. They suggest the role of the school is to understand the cultural context and respond appropriately for the benefit of each student. We believe that it is essential that 'Strong and Smart' goes beyond the rhetoric and promotes rigorous, challenges and culturally-responsive curriculum in the classroom.

### **Meta-strategy 2 and Meta-strategy 5: Embracing Indigenous leadership and innovative staffing models**

Employing Aboriginal Education Workers (AEWs) and supporting them as co-educators can help develop a rigorous and relevant curriculum when non-Indigenous teachers tap into the rich, local cultural knowledge that AEWs bring to the classroom.

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Torff's 2011 short paper provides a good summary of the key points

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