# Centre for Understanding Behaviour Change

#### February 2012

#### Message from the Director

Understanding human behaviour, and how to change it, lies at the core of social science. However, no single theory or discipline can hope to account for the behaviours of young people and educational professionals that policymakers are currently seeking to change: motivations and decisions are complex, rich and multidimensional. This has led social scientists to look beyond the traditional boundaries of our respective disciplines and to work with neuroscientists, experimental psychologists and others in order to better understand how to change human behaviours.

Such interactions have produced the field of behavioural economics, a field that emphasises the limitations of standard models of rationality. For instance, individuals may use rules of thumb when making choices, the description of choices may matter, individuals' choices may be biased towards immediate gratification and they may also follow social norms. Such work has already led to important changes in areas such as pension policy (automatically enrolling employees) and energy use (showing households how their energy use compares with that of their neighbours). These policy ideas have been made famous by Cass Sunstein and Richard Thaler in their book *Nudge*. However, it is important not to forget the role that information, regulation and incentives play in seeking to shape human behaviour. One must first identify the decision-making processes driving current patterns of behaviour; only then can we understand the most effective way to shape human behaviours.



Following such an approach, the aim of the Centre for Understanding Behaviour Change (CUBeC) is to understand how to promote desired behavioural changes amongst young people, as well as other actors in their lives. To do this, we have brought together experts from different disciplines and institutions in order to generate new robust evidence and provide evaluative reviews of existing evidence. CUBeC includes academic experts of the highest international standing from the fields

of economics, neuroscience, cognitive and experimental psychology, sociology, social research and educational research. The team of experts come from a range of the country's leading public policy research centres: the Centre for Market and Public Organisation (CMPO), the Institute for Fiscal Studies (IFS) and the National Centre for Social Research (NatCen). The team also includes world-class academic researchers from a number of the UK's leading universities: the University of Bristol, Imperial College, the Institute of Education, the London School of Economics and Political Science, the University of Oxford and University College London. We are grateful to the Department for Education for providing funding. More details can be found on the CUBeC website (<u>http://www.cubec.org.uk/</u>).

This digest will provide regular updates on CUBeC's work and summarise other research done in the field of behaviour change across a range of disciplines. In particular, we will provide regular updates on CUBeC's own research programme (section 1), including key findings. There will also be two topical articles written by CUBeC members (section 2). In this edition, Dr Paul Howard-Jones reflects on what



education policymakers can learn from neuroscience and Haroon Chowdry examines the potential role for 'payment by results' across a number of policy domains. CUBeC will also produce evaluative reviews of evidence in particular areas, summarised in section 3. This edition contains summaries of a review of evidence on behaviour change within organisations, evidence submitted to the House of Lords Science and Technology Committee, and a review of the role of incentives in special educational needs (SEN) funding systems. In addition to such focused reviews, the CUBeC Digest also contains a summary of recent, key pieces of research on behaviour change produced by others working in the field (section 4). The website will contain an organised list of all such published research, with each new edition of the digest highlighting new and recent pieces of evidence.

This is an exciting new venture, dedicated to producing evidence and insight on what works to change behaviour in education.

Professor Simon Burgess, Director of the Centre for Understanding Behaviour Change

http://www.cubec.org.uk

#### Contents

- 1. CUBeC Research Programme.....3
- 2. Behaviour Change Theory and Policy.....6 Neuroscience, society and behaviour – Dr Paul Howard-Jones.....7 Payment by results – Haroon Chowdry.....9
- 3. CUBeC Evidence Reviews.....11
- 4. Published Research by Theme.....13



#### 1. CUBeC Research Programme

We have divided our research programme into five themes:

- 1 Response to risk and the adoption of risky behaviours
- 2 Promoting healthy living and positive activities
- 3 Processing information, framing and making choices
- 4 Changing behaviour for positive educational outcomes
- 5 Overarching projects: behaviour change in general, and data development

In this first edition, we describe the set of published reports from our research programme.

## Subject and course choices amongst young people in England at ages 14 and 16: insights from behavioural economics (Theme 3)



The subject and course choices made by young people ultimately represent a series of decisions about the sort of life they would like to lead in future. Some evidence already exists on the inputs into young people's choices, such as the issues they consider and the role played by information, advice and guidance. In this piece of research, we consider the different cognitive mechanisms by which young people may make their subject and course choices, and how an understanding of these different mechanisms can shape policy responses to any perceived concerns.

In a standard model of rationality, individuals weigh up

the potential costs and benefits of different choices to themselves and make the choice that is likely to maximise their lifetime well-being. If young people's subject and course choices conformed to such a model, policymakers might wish to offer high-quality information to students or encourage students to take particular subjects if there are spillover benefits to society from individuals taking those subjects. No further intervention would be required. However, in recent years, researchers in psychology and behavioural economics have documented numerous anomalies that could apply to human decision-making.

Evidence from behavioural economics suggests that individuals appear to treat the present as a 'special case' when planning ahead (present bias), appear to exhibit overconfidence in their own ability and over-optimism about the likelihood that good things will happen to them, and appear to underestimate their own adaptability when imagining their life under different circumstances (projection bias). Applying these insights to subject and course choices, present bias suggests that individuals may overweight short-run considerations (such as taking easier courses) compared with long-run considerations. If pupils are overconfident they may overestimate their likelihood of performing well at school and so could choose courses to which they are ill-suited. Projection bias suggests that students may not fully appreciate the way their preferences will change, and may thus make choices that restrict their ability to make desirable choices at later ages.

Framing effects suggest that young people might be influenced (or 'nudged') towards certain options, depending on how those options are presented. In particular, default options are more likely to be chosen for reasons beyond their actual desirability, and 'anchoring' based on recently-presented pieces of information may also bias individuals' choices. The order in which choices are presented could matter, as could whether they are described as losses or gains around some reference point. Over-introspection regarding large choice sets could also worsen the quality of decision-making.

Policymakers should be particularly cautious before directly applying these insights to school pupils. The evidence supporting these insights comes overwhelmingly from experiments in laboratory settings, usually conducted on adults rather than school-age individuals. The only way to assess whether such insights apply to young people in school settings would be to conduct experiments designed to tease out the process by which people make decisions. Such experiments are relatively simple and could be of wider relevance to education policy by illustrating the way young people approach choices.

Finally, although behavioural economics may provide new and valuable knowledge about the way individuals make choices, one should not forget the potential importance of individual circumstances, the provision of information or incentives either. We conduct our own empirical analysis of children in the Longitudinal Study of Young People in England (who took their GCSEs in 2006). We find that children from richer families and whose parents have higher levels of education are more likely to study triple science, to take the EBacc combination of subjects, to stay on in full-time education, and to study A levels. However, such differences largely disappear when we control for prior attainment and a wider range of factors. Furthermore, as was shown by the recent Wolf Report, one of the key trends in subject and course choices in England has been the growth of vocational qualifications and GCSE equivalents. In this report, we present suggestive evidence that this growth in vocational qualifications may have been driven (at least in part) by schools attempting to 'game' the league table system. Schools performing comparatively poorly on the raw 'at least five GCSEs at grade A\*–C' measure appear to have moved most rapidly towards vocational courses, and the schools that were swiftest to adopt vocational courses appear to have made the most substantial gains in their '5+ A\*–C' performance.

Wenchao Jin (IFS), Alastair Muriel (IFS) and Luke Sibieta (IFS)

https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-RR160

# Barriers and facilitators to pro-social behaviour among young people: a review of existing evidence (Theme 2)

This report presents an overview of current evidence on pro-social behaviour among young people aged 16–19, drawing together a review of existing literature and analysis of existing secondary data.

The evidence sheds a positive light on young people's engagement in pro-social activities (defined as formal volunteering, informal volunteering, civic activity and group membership). Young people are more likely to engage in these activities than the rest of the working-age population. Trends in levels of engagement in these activities over the last



decade are also generally more positive than among older age groups. Traditional differences in participation across gender and ethnic groups appear to be narrowing among the young, compared with older age groups. The literature suggests that recent interventions focusing on attracting a more socially mixed profile of young people to pro-social activities are having some impact on this.

Many young people are motivated to engage in volunteering and group activities because they perceive that these activities help with developing skills, confidence and career-building. These attributes are relatively more important for young people than for older age groups. The evidence comparing young people's engagement in such activities with their later education and employment is consistent with these motivations. There is generally a positive association between young people's formal volunteering and group activities and their later education and employment outcomes. The literature shows a similar pattern but suggests that for pro-social activities other than volunteering, the association is less straightforward. Our secondary analysis also finds that engagement is associated with obtaining better qualifications

and higher wages. However, as noted in the literature, this may capture something about the type of young people who choose to engage, as well as any direct effect of the activities themselves.

Our analysis also shows that traditional differences across demographic groups are narrower among young people. The literature points to sociocultural barriers related to ethnicity and religion, such as a negative attitude towards volunteering vis-à-vis work, but these do not appear as pervasive in our analysis. Young people from an ethnic minority are engaged in more pro-social action than other age groups. Perhaps surprisingly, we also find little evidence that health or disabilities are major barriers to pro-social activity among young people. However, some young people do face such barriers – for example, a lack of education or employment. The literature suggests that people not in education, employment or training (NEETs) lack the social networks or other routes into pro-social activity, as well as the self-esteem and confidence that can be gained from employment, education or training. In our analysis, pro-social behaviour was found to be significantly lower amongst young NEETs (compared with those in education or employment).

The evidence suggests that there are two challenges for policy and the voluntary sector in the future – to sustain engagement as young people move from education into employment and to reach the minority who are not currently engaged.

Lucy Lee and Gareth Morrell (NatCen), Annalisa Marini and Sarah Smith (CMPO/Bristol).

https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-RR188

#### Engaging adults in youth volunteering (Theme 2)

This report focuses on the challenge of engaging adults in volunteering with young people. It explores the broader challenges and facilitators for adults thinking about volunteering, but more specifically in relation to young people and across three key stages: factors that affect motivations to volunteer with young people (including issues related to CRBs); barriers and facilitators for entering and remaining as a volunteer; and the factors that can change behaviour to encourage and retain volunteers. The findings are based on focus groups with voluntary sector managers, volunteers and non-volunteers

The first set of factors related to what motivates people to think about volunteering in the first place. These were either intrinsic or extrinsic to volunteering. Intrinsic motivations centred on participants wanting to give something back to the community (for example, sharing their skills), whereas extrinsic ones focused on participants wanting to achieve a personal outcome from the volunteering experience – particularly in terms of a pathway to employment. Specific motivations relating to volunteering with young people included perceptions about young people as a group in



need of support (e.g. a vulnerable group) and/or a group where volunteering could make the greatest difference, adults feeling they could benefit from the experience of working with young people (e.g. providing them an insight into their own children) and the difference volunteering could make to the community, such as making it a safer place.

De-motivators to thinking about volunteering ranged from personal to socio-political factors. These included personal characteristics of non-volunteers (e.g. self-centredness, as attributed by volunteers and managers), a narrow understanding of volunteering in terms of what it is (e.g. just working in a charity shop) and who does it (e.g. "do-gooders"), negative perceptions of the culture of voluntary sector as being target driven and disorganised and much wider socio-political factors. This included the distrust of the Big Society and, by association, volunteering.

Once motivated, there were a second set of factors that acted as barriers and facilitators to individuals entering and remaining as volunteers. These factors are divided into three groups. A first key issue was seen as lifestyle; in particular

the stage of life an individual was at, with different stages of life being seen to bring into play factors around time and money which could have an impact on entry into volunteering. For example, older people and recent graduates were seen to have more time on their hands to volunteer than young professionals or those with family commitments. Underlying this view was the feeling that either having spare time or financial stability was a necessary condition to being able to volunteer. Alternatively, it was also felt that lots of busy people volunteer so it was a case of individuals needing to organise their time more effectively.

Where people were either at the 'correct' life stage or managed their time effectively two other sets of practical factors came into play. Firstly, this included general practical considerations such as the issue of centralised bureaucracy - particularly Criminal Records Bureau checks. However, although these were considered to be a significant barrier to volunteering, participants acknowledged the value of having safeguards for those working with children and teenagers. This suggests that any change to the CRB system must balance the needs of potential volunteers alongside the protection of young people. This is reflected in people's preference for simplifying the CRB process, rather than scrapping checks altogether.

Secondly, participants identified factors specifically related to the practices of the voluntary sector. These latter set of factors were also seen to be instrumental in shaping individuals' decision to continue volunteering and included the willingness and ability of the voluntary sector to be flexible in their practices (e.g. offering flexible time commitments to volunteers), making volunteering accessible and inclusive as possible and valuing volunteers in terms of how they are recruited (e.g. responding to enquiries promptly) and how they are treated once they are recruited (e.g. providing a welcoming environment, treated appropriately but as equal to paid staff, given opportunities to develop and financially reimbursed for expenses). A key finding in relation to this was that, although these are practical factors only affected those already motivated to volunteer, persistent frustration with these barriers can act as a de-motivator for those previously keen to volunteer.

Based on this discussion, the research identified a number of strategies to motivate volunteering with young people, help entry into the voluntary sector and retain volunteers:

- Motivations to volunteer with young people Better promotion of the full range of volunteering opportunities by the voluntary sector using case studies of previous volunteers to show what adults have to give; the voluntary sector, government and media tackling negative perceptions of young people and providing a realistic picture of the challenges they face; the voluntary sector providing opportunities for inter-generational interaction.
- Entering volunteering Flexibility of opportunity provided by the voluntary sector in terms of activities offered and time commitment; the voluntary sector listening to what volunteers want to get out of volunteering and providing a welcoming environment; improved partnership working within the voluntary sector to ensure that volunteers not suitable for one organisation are passed to others rather than lost completely; simplification of bureaucratic processes such as application forms and safety checks.
- Retaining volunteers The voluntary sector valuing volunteers by involving them in decision-making about their role, treating them with respect and, where appropriate, in a similar way to staff; the voluntary sector investing in volunteers in terms of support and development.

Mehul Kotecha, Lucy Lee and Gareth Morrell (NatCen).

https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-RR189

#### 2. Behaviour Change Theory and Policy

Each issue of the digest will also contain longer articles written by CUBeC members. Some of these articles will focus on theoretical insights from different disciplines, whilst others will focus on topical areas of policy. This first issue contains an article written by Dr Paul Howard-Jones on what education policymakers can learn from neuroscience and one written by Haroon Chowdry on the topic of 'payment by results'.

#### Neuroscience, society and behaviour - Dr Paul Howard-Jones



In this article, Dr Paul Howard-Jones discusses what education policymakers can learn from neuroscience. More details and references can be found in a review available on the CUBeC website entitled 'Educational investment: interrelating neuroscientific, educational and economic perspectives' (http://www.bristol.ac.uk/cubec/portal/pr2.pdf).

Rapid advances in our understanding of the brain and the technologies used to study it are now providing insights into 'normal' human behaviour, learning and mental well-being, including the potential to enhance and manipulate brain function. Little wonder, then, that the last decade has seen something of a step change in efforts to understand how neuroscience may impact on broader issues involving society. Most recently, the Royal Society launched its 'Brain Waves' project to investigate implications of brain science for a diverse range of public policy areas such as health, education, law and

national security, and to explore associated questions around concepts such as identity, responsibility and liberty (<u>http://royalsociety.org/brainwaves</u>). There is a particularly strong and global interest in applying neuroscience in education, with supranational initiatives such as the OECD's 'Learning Sciences and Brain Research' project (<u>http://www.oecd.org/document/60/0,3343,en\_2649\_35845581\_38811388\_1\_1\_1\_00.html</u>) and European governments, including Germany and the Netherlands, funding specific programmes in this area.

The insights arising from neuroscience with potential relevance to education are diverse. In reading, children with developmental dyslexia have shown reduced activation in typical left hemisphere sites and atypical engagement of right hemisphere sites, with consequent educational interventions improving language outcomes and remediating these differences in neural activity. Neuroscience has helped identify 'number sense' (a non-symbolic representation of quantity) as an important foundation of mathematical development and associated with a specific region of the brain called the intraparietal sulcus. As we learn to count aloud, our number sense integrates with our early ability to exactly represent small numbers (1 to 4) to 'bootstrap' our detailed understanding of number. Such insights have prompted an educational intervention yielding promising results. Neuroscience is also shedding light in other areas of education, providing insight into the link between exercise and learning and prompting re-examination of teenage behaviour.

Perhaps as importantly, established scientists are now promoting neuroscience as having educational value. Indeed, neuroscientists appear increasingly willing to speculate on the possible relevance of their work to 'real-world' learning, albeit from a vantage point on its peripheries. Such speculation often comes under the heading of 'educational neuroscience' – a term that broadly encompasses any cognitive neuroscience with potential application in education. But moving from speculation to application is not straightforward, since the educational value of insights from neuroscience may rest on their integration with knowledge from more established educational perspectives.

Indeed, there are many challenges in moving from brain scan to lesson plan, or to any other type of real-world application. Seeking relationships between neural processes and the types of complex everyday behaviours we observe in schools and colleges is not straightforward. To begin with, understanding of these contexts can be informed by at least three very different types of evidence: biological, social/behavioural and experiential. One thing appears clear from the outset: a simple transmission model in which neuroscientists advise educators (or policymakers) on their practice should never be expected to work. Neuroscientists are rarely experienced in considering practices involving contexts such as classrooms. Neuroscience cannot provide instant practical solutions, and research is needed to bridge the gap between

laboratory and application. In classroom contexts, to emphasise the key role of educational values and thinking in the design and execution of such a venture, workers at the University of Bristol (NEnet, on <u>http://www.neuroeducational.net/</u>) have found themselves using the term 'neuroeducational research' to describe this enterprise. For both scientists and educators, co-construction of concepts requires broadening personal epistemological perspectives, understanding different meanings for terms used in their everyday language (e.g. learning, meaning, attention, reward) and appreciating each other's sets of values and professional aims. A dialogue is needed about how the different perspectives and their favoured types of evidence can inform about learning in different but potentially complementary ways.

In contrast to such authentic interdisciplinary work, brief intellectual liaisons between education and neuroscience are never likely to bear healthy fruit. These flirtations may, indeed, spawn further neuromyth, often due to a lack of attention to the psychological concepts that link brain to behaviour. A common example is when our understanding of how synaptic connections are made in the brain is used as an explanation of how we form connections between ideas. This conflation of brain and mind allows some educational practices to gain an apparently neuroscientific flavour (published research shows that explanations provide greater satisfaction when they include neuroscience, even when the neuroscience is irrelevant). In reality, however, association between ideas is a well-studied psychological concept, but is currently impossible to study at the level of the synapse.

Having this important conversation about how different perspectives inform learning is a first step towards a theoretical framework for research at the interface of neuroscience and real-world contexts such as education. This can help us to combine findings more judiciously across perspectives to develop a better understanding of learning, but such an aspiration also has implications for methodology. If there is a genuine commitment to interrelate findings from different perspectives, then the methods associated with these perspectives can be adapted to better support such interrelation. For example, qualitative interpretation of classroom discourse can draw usefully on neurocognitive concepts in the way they interpret particular observations. Also, some brain imaging studies can contribute more meaningfully to the construction of neuroeducational concepts if they include semi-structured interviews of participants, to derive experiential insights about their constructs, strategies and attitudes. For example, NEnet researchers have been using fMRI (functional magnetic resonance imaging) to study how we learn from opponents in competitive games, using qualitative discourse analysis to understand how games subvert learning discourse in positive ways and using action research to develop classroom practice with teachers that draws on such insights. Only using a variety of methods that are adapted to aid their interrelation, can neuroeducational research be carried out that produces scientifically valid and educationally relevant and useful outcomes.

As well as requiring new approaches to methodology, the arrival of neuroscience in education raises a host of ethical issues that must be considered by practitioners, learners and policymakers. These include the existence and use of increasingly effective drugs for cognitive enhancement by healthy learners, the demonstrable effectiveness of neural markers for infant screening and the imminent possibility of educational profiling using genetic markers. The need for interdisciplinary dialogue has never been more pressing.

#### Payment by results – Haroon Chowdry

In this article, Haroon Chowdry from the Institute for Fiscal Studies discusses the extent to which 'payment by results' can be successfully applied to different policy contexts. More details and references can be found in a review published on the CUBeC website (<u>http://www.bristol.ac.uk/cubec/portal/pr3.pdf</u>).



The Department for Education is currently exploring the potential use of a 'payment by results' system in the provision of early-years services, funded from within the Early Intervention Grant. This article explores the rationale for implementing payment by results, and then draws together evidence from applications of it in welfare-to-work and healthcare policy, before discussing the high-level key messages for policymakers.

The theoretical justification for payment by results (PBR) stems from a wellknown model in economics in which an employer ('principal') enters into a contractual agreement with a worker ('agent'). The principal aims to achieve some objective, such as maximising the level of output. The agent may not share this objective, and may instead care solely about his or her wage. Furthermore, there is a cost to the agent of putting in effort. The prediction from the theory is that if the principal cannot perfectly observe the agent's effort *and* if the two parties' objectives are not aligned, then the agent will shirk on the job, resulting in worse outcomes for the principal. To rectify this, the

principal may specify the contract to pay more to the agent if output (which can be observed) is higher, and less if it is lower. This realigns the agent's aims with the principal's, providing a net incentive to put in more effort.

Nevertheless, standard principal–agent theory has numerous simplifications that might reduce its applicability to the public sector. First, public sector employees may be accountable to several layers of management and are ultimately accountable to taxpayers as well. Second, individuals often collaborate in departments or teams, which introduces its own nuances, and services can be commissioned to a range of providers who must compete with one another. Third, the theory assumes that the agent knows how to improve outcomes. This idea may be less applicable in public services, where there is uncertainty over the methods that improve outcomes and where services are often delivered to disadvantaged people, whose outcomes might be more difficult to influence. Moreover, not all outcomes of public services, but is also important. If the quantity of output is targeted by an incentive scheme, then quality may be neglected. There is also the issue of 'intrinsic motivation': the innate pleasure or pride that employees or agents get from a job. This may be particularly relevant for the public sector. If agents are intrinsically motivated to do their work, then they may be less responsive to financial ('extrinsic') incentives. Worse still, intrinsic motivation might suffer when financial incentives are introduced, leading to a theoretically ambiguous effect on overall performance. These caveats raise questions about the applicability of incentive schemes in the public sector.

In both the US and the UK, performance incentives have been used to improve services that aim to place disadvantaged people in work. However, providers may face incentives to cream-skim their clients or otherwise manipulate the system; evidence for this has been found in American employment programmes. One way to lower the risk of this occurring is to measure value-added outcomes to take into account the characteristics of the area or the client group. This would also reduce the risk of penalising providers who operate in disadvantaged areas.

Burgess et al. (2004) analysed the performance of Jobcentre Plus staff in response to a piloted incentive scheme. Their results lend some support to the existence of a 'free-rider' problem that can plague group-based incentives: they found that the impact on performance was higher in smaller teams (where staff can monitor each other's productivity) and smaller in larger teams (where it is easier to free-ride on the efforts of others). Thus the size of the team is an important consideration. The researchers also found that the scheme did not lead to any significant improvement in quality measures. Nevertheless, they concluded that the scheme is more cost-effective than a general pay rise.

Winsor et al. (2010) outlined five key issues when designing a welfare-to-work incentive scheme, which carry over well to early-years services. The issues are: (i) whether to provide individual-level or group-level bonuses (given that workers may be organised into teams); (ii) the size of the bonuses (or penalties) involved; (iii) the choice of performance measure; (iv) whether to reward all agents that reach a fixed target, or reward the best-performing agents only; and (v) whether to place more weight upon improvements delivered to disadvantaged or hard-to-reach client groups.

Looking at healthcare, the evidence on outcome-contingent funding in this area has produced generally negative conclusions. This may be because the healthcare sector is not suited to this framework (e.g. due to cream-skimming) or because such a framework has not been introduced appropriately. Perverse incentives notwithstanding, the evidence is mixed on the efficacy of incentives in this environment. Town et al. (2005) reviewed the relevant literature and concluded that the quality of healthcare delivery is not responsive to financial rewards, although this may be because the rewards were small. On the other hand, a trial conducted by Lindenauer et al. (2007) found that the combination of paying hospitals for performance while compelling them to report outcomes publicly did lead to improvements. This suggests that incentives need to be combined with other accountability devices in order to be effective.

The most general lessons that can be learned – from both theory and application – are the most likely to be transferable to an early-years setting. Ingraham (1993) concluded that policymakers should take public sector organisations and their needs as a starting point, rather than the rationale or experiences of PBR in the private sector. Another recommendation is to dramatically increase the provision of data to planners and authorities: not only does this improve managerial information and planning, but it also serves as an accountability tool. Propper and Wilson (2003) stressed the need to build up an evidence base first before any large-scale implementation of PBR. They claimed that there is a lack of evidence on the effectiveness of performance management mechanisms; this is not a reason not to implement them, however. Instead, the implementation of such measures must be via small-scale pilots that can be robustly evaluated to produce the required evidence. The way such data are gathered also needs attention: independent data sources (such as official statistics or surveys of client groups), which cannot be manipulated by agencies, should be used as much as possible. It is, of course, preferable to measure value-added outcomes relative to some pre-policy benchmark. Furthermore, if data quality is an issue and it is not possible to measure outcomes precisely, then incentives should be less sharp, to stabilise the behavioural response of agencies and subsequent payments received, as recommended by Burgess and Ratto (2003).

Taking all the evidence as a whole, the final high-level recommendation is to examine the nature of the services being delivered and use such insights to tailor performance improvement schemes accordingly. A common feature of public service delivery, and a complication of the standard theoretical model, is that agencies and workers may have multiple competing tasks, while output itself may be difficult to measure. In such circumstances, direct supervision of agencies combined with subjective performance assessments may be more effective than payments or sanctions on the basis of objective indicators (Burgess and Metcalfe, 1999). This is also true if the service commissioner has more information about the process required to achieve outcomes than about the quantity or quality of those outcomes. PBR is therefore more suited to services where commissioners have less of an idea of how agencies should achieve the required outcomes – which will be left to their discretion – but are able to measure the outcomes well.

Therefore, a measured approach seems the most preferable and the most likely to succeed. Microeconomic, private sector theories have an intuitive appeal but may have limited relevance to public services. With that in mind, incentive schemes should be tailored to reflect the realities of the organisations involved in the delivery of early-years services. The human aspect also needs to be taken into account, since workers may differ from the *homo economicus* upon which standard models of financial incentives are predicated. This requires careful design of incentive schemes, not just to minimise unintended consequences, but also to ensure that morale is protected. Finally, the implementation of such a scheme should be preceded, accompanied and followed by rigorous collection of independent data. This not only facilitates PBR in the first place; it also allows its efficacy to be assessed, and will provide valuable evidence to support future policy formation.

#### 3. CUBeC Evidence Reviews



Alongside long-term research projects and the generation of new evidence, CUBeC will undertake reviews of existing evidence. In this and each subsequent edition of the CUBeC Digest, we will seek to provide summaries of such reviews.

This first digest contains a summary of evidence on organisational change and a general review of behaviour change theory and evidence submitted to the House of Lords Science and Technology Committee, as well as a review of the role of incentives in special educational needs funding systems.

#### Organisational change management

#### **Review by Matt Barnard and Naomi Stoll**

#### (http://www.bristol.ac.uk/cubec/portal/pr1.pdf)

This paper sets out the findings of a brief review of organisational change literature. This literature is a large and somewhat contradictory body of work, but a number of general points emerge that are worth highlighting. First, while change can be planned and introduced by managers, it is important to recognise that employees may perceive themselves to be working within a constantly shifting environment. This does not mean that it is not possible to introduce a programme of change, but it does indicate that it is important to be aware of what other changes are also occurring and to acknowledge the risk that any individual set of changes may be overwhelmed by the combination of other changes taking place. A second key point emerging from the review is that the literature is consistent in indicating that change is not a single, continuous process, but rather is broken down into a number of different steps. The significance of this is that managers will need to consider what strategies, in terms of communication, training, reinforcement etc., are appropriate for the different stages, rather than decide on a single approach that can be applied throughout the process; at the same time, they must remain flexible and reactive to changes as they happen.

#### Evidence to House of Lords Science and Technology Committee

#### Memorandum by Imran Rasul and Myra Mohnen, pages 724-763

#### (http://www.parliament.uk/documents/lords-committees/sciencetechnology/behaviourchange/BCwrittenEvidenceNtoR.pdf)

This memorandum reviews insights from a range of social sciences on how human behaviour is influenced by internal and external factors, and issues related to policy interventions. The first key question that the memorandum aims to answer is 'What is known about how behaviour can be influenced?'. A general point that emerges from the review is that behaviour is affected by numerous factors and there are plenty of opportunities to intervene.

In the discussion of the internal and external factors that influence individual decision-making, the authors offer brief intuition, one or two pieces of robust empirical evidence for each factor, and examples of policy intervention in reality. The internal factors discussed are wide-ranging, including self-efficacy, emotion, ego, altruism, fairness and equity, probabilistic judgements, framing and bounded rationality. The external factors include norms, public commitments, reciprocity, regulations, persuasion and contextual factors. All factors can potentially be manipulated. For example, past intervention such as the 'Cincinnati Initiative to Reduce Violence' has been proven effective as it changed social norms.

Regarding the design and implementation of policy interventions, the authors make two recommendations. First, interventions that aim to shift individual behaviour should be used in combination with each other, because behaviours are influenced by numerous factors. In order to achieve long-term behavioural changes, interventions should be sustained over time, continually evaluated and consistently implemented. Second, it is important to provide credible evidence of the impact of policy on behavioural changes; field experiments are the best approach to assess the causal impact. Communicating such evidence with the public can help shape "some external factors that themselves help promote future behavioral changes".

#### Special educational needs funding systems: the role of incentives

#### Review by Claire Crawford, Luke Sibieta and Anna Vignoles

#### (http://www.bristol.ac.uk/cubec/news/2011/6.html)

Every funding system creates incentives for some individuals to behave in particular ways, and systems for financing special educational needs (SEN) are no different. In this short note, we examine the incentives that systems for financing SEN can create for different individuals.

The key differences between the funding systems that we analyse arise in terms of the funding for children with statemented SEN (funding for pupils without statements of special educational needs tends to allocated on the basis of indicators such as measures of deprivation). Under the common model applied by the majority of local authorities in England, funding is entirely pupil-led, with authorities responsible for identifying and funding each pupil's particular needs. Under a banded funding system, funding is again determined by local authorities and entirely pupil-led, but the expected levels of support (and resources) for children with different types of needs are set out clearly in advance, hopefully making the system more equitable and transparent than the common model. By contrast, under a fully delegated funding system, all funding for pupils with special educational needs – including pupils with statements – is distributed in a similar manner to that outlined for pupils without statements of special educational needs.

These funding systems can have very different implications for incentives. Under the common and banded funding models, the interests of schools and parents are aligned, with a common incentive to maximise the resources they receive from the local authority for the child. On the opposite side stands the local authority, with an incentive to limit the resources allocated per child, given that it has a finite amount of resources and must make difficult decisions about how to spend it. As a result of parental and school pressure, such systems are likely to lead to an increase in the proportion of students identified as having SEN, consequent cost escalation and litigation.

Only the delegated system has the potential to remove the alignment of interests between schools and parents. Instead, in such a system, the point of conflict will be between parents and schools, which could still lead to litigation and other pressures, and may also have negative implications for school–parent relationships. Moreover, the delegated system creates particular risks for small schools, very high-needs pupils and pupils without statements of SEN.

#### 4. Published Research by Theme

As well as providing details on research on behaviour change published by CUBeC researchers, this digest provides a summary of recent pieces of research on behaviour change published by others working in the field. Each edition will contain a list of recently-published research across our five themes.

#### Theme 1: Response to risk and the adoption of risky behaviours

'The economic cost of teen drinking: late graduation and lowered earnings', Francesco Renna, *Health Economics* (2010), 16, 407–19, <u>http://ideas.repec.org/a/wly/hlthec/v16y2007i4p407-419.html</u>

This paper analyses the effect that binge drinking has on the probability of graduating on time from high school and on future earnings. The paper finds that heavy drinking decreases the probability of graduating on time. Binge drinking does not have a direct impact on adults' labour earnings, but graduating late results in lower labour income.

'Forward-thinking teens: the effects of college costs on adolescent risky behavior', Benjamin W. Cowan, *Economics of Education Review* (2011), 30, 813–25,

http://www.sciencedirect.com/science/article/pii/S0272775711000616

This paper analyses the effect of college costs on teenagers' engagement in risky behaviours before they are old enough to attend college. It finds that in response to lower college costs, teenagers tend to think they are more likely to attend college and therefore reduce substance use and sexual partnership. These findings suggest that the often-studied correlation between schooling and health habits emerges in adolescence because teenagers with brighter college prospects curb their risky behaviour in accordance with their expectations.

**'Binge drinking and labor market success: a longitudinal study on young people'**, Shao-Hsun Keng and Wallace E. Huffman, *Journal of Population Economics* (2010), 23, 303–22, <a href="http://ideas.repec.org/a/spr/jopoec/v23y2010i1p303-322.html">http://ideas.repec.org/a/spr/jopoec/v23y2010i1p303-322.html</a>

This paper shows that binge-drinking behaviour is quite responsive to the price of alcohol and is a rational addiction. A new result is that an individual's decision to binge drink has a statistically significant negative effect on his/her earnings.

Survey of Smoking, Drinking and Drug Use among Young People in England, Elizabeth Fuller, NHS Information Centre for Health and Social Care (2010), <u>http://www.natcen.ac.uk/series/survey-of-smoking-drinking-and-drug-use-among-young-people-in-england</u>

This is an annual survey of smoking, drinking and drug use among young people in England. It reveals that there has been a decline in drug use amongst 11- to 15-year-olds since 2001, and that although not all young people drink alcohol, those who do are likely to drink significant amounts.

*Risky Behaviour and Social Activities*, Andreas Cebulla and Wojtek Tomaszewski, **Department for Children**, Schools and Families Research Report DCSF-RR173 (2009),

http://publications.education.gov.uk/default.aspx?PageFunction=productdetails&PageMode=publications&ProductId=DC SF-RR173&

The evidence gathered in this study suggests that risky behaviours evolve as young people grow older. There appear to be certain activities that accelerate or stabilise participation in a range of risky behaviours, and this process may be difficult to reverse by engaging people in what might be considered 'positive' social activities. Engaging young people in such activities may possibly prevent additional risky behaviours being taken up but it is unlikely to decrease participation.

'Affective and deliberative processes in risky choice: age differences in risk taking in the Columbia Card Task', Bernd Figner, Rachael J. Mackinlay, Friedrich Wilkening and Elke U. Weber, *Journal of Experimental Psychology: Learning, Memory, and Cognition* (2009), 35, 709–30, <u>http://vlab2.gsb.columbia.edu/files/Figner-Mackinlay-Wilkening-Weber-2009-Affective-and-Deliberative-Processes-in-Risky-Choice.pdf</u>

This study uses experiments to support the hypothesis that risk-taking results from competition between affective processes and deliberative cognitive-control processes. The results suggest that "adolescents' affective system [tends] to override the deliberative system in states of heightened emotional arousal".

'Impact of an online alcohol education course on behavior and harm for incoming first-year college students: short-term evaluation of a randomized trial', Katherine Croom, Deborah Lewis, Timothy Marchell, Martin L. Lesser, Valerie F. Reyna, Lisa Kubicki-Bedford, Mitchel Feffer and Lisa Staiano-Coico, *Journal of American College Health* (2009), 57, 445–54, <a href="http://mrburns2.human.cornell.edu/hdpublications/HDPublic/docs/2009%20Croom%20et%20al.-">http://mrburns2.human.cornell.edu/hdpublications/HDPublic/docs/2009%20Croom%20et%20al.-</a> Impact%20of%20an%20Online%20Alcohol%20Eduation%20Course-J%20Am%20College%20Health%20.pdf

The authors conducted an experiment that provided alcohol education to a randomised group of incoming college students. The results suggest that knowledge alone is insufficient for reducing alcohol-related risky behaviour.

#### Theme 2: Promoting healthy living and positive activities

#### Evaluation of 'v', http://www.natcen.ac.uk/study/evaluation-of-v

This study evaluates 'v', an independent charity launched by the previous government with the aim of engaging more young people in volunteering. The final report suggests that, based on available data, 'v' has exceeded its targets for volunteering opportunities set by the Russell Commission. Perhaps even more significantly, there is strong evidence that 'v'-funded volunteering opportunities are being taken up by a greater diversity of young people than is normally the case

#### http://www.natcen.ac.uk/study/evaluation-of-v

**'Imitative obesity and relative utility'**, David G. Blanchflower, Andrew J. Oswald and Bert G. M. Van Landeghem, *Journal of the European Economic Association* (2009), 7, 528–38, <u>http://ideas.repec.org/a/tpr/jeurec/v7y2009i2-3p528-538.html</u>

This paper presents cross-sectional evidence from 29 countries and concludes that dieting and perceptions of being overweight are influenced by relative body mass index (BMI).

'Linking the prevention of problem behaviors and positive youth development: core competencies for positive youth development and risk prevention', Nancy G. Guerra and Catherine P. Bradshaw, *New Directions for Child and Adolescent Development* (2008), Special Issue: Core Competencies to Prevent Problem Behaviors and Promote Positive Youth Development, 122, 1–17, <a href="http://www.ncbi.nlm.nih.gov/pubmed/19021244">http://www.ncbi.nlm.nih.gov/pubmed/19021244</a>

This special issue reviews the empirical literature linking five core competencies with prevention of specific risky behaviours and positive youth development, giving examples of policies and programmes in the US and internationally. The core competencies that capture 'what it means to be a healthy youth' are (1) positive sense of self, (2) self-control, (3) decision-making skills, (4) a moral system of belief and (5) pro-social connectedness.

**'Testing for altruism and social pressure in charitable giving',** Stefano DellaVigna, John A. List and Ulrike Malmendier, **NBER Working Paper 15629 (2009)**, <u>http://www.nber.org/papers/w15629</u>

The authors' experiment of door-to-door fund-raising suggests that social pressure is influential in door-to-door giving.

#### Theme 3: Processing information, framing and making choices

**'Temporal discounting of hypothetical monetary rewards by adolescents, adults, and older adults',** Robert Whelan and Louise A. McHugh, *Psychological Record* (2009), 59, 247–58, <a href="http://opensiuc.lib.siu.edu/cgi/viewcontent.cgi?article=1017&context=tpr">http://opensiuc.lib.siu.edu/cgi/viewcontent.cgi?article=1017&context=tpr</a>

This study conducts an experiment of patience on three different age groups: adolescents, adults and older adults. The results suggest that adolescents are significantly more impatient than adults when the stake is relatively small, but the

difference is insignificant when the stake is larger, and that adolescents are significantly more impatient than older adults.

'Large stakes and big mistakes', Dan Ariely, Uri Gneezy, George Loewenstein and Nina Mazar, *Review of Economic Studies* (2009), 76, 451–69, <u>http://duke.edu/~dandan/Papers/largeStakes.pdf</u>

To test whether very high monetary rewards can decrease performance, this paper conducted a set of experiments in the US and India in which subjects worked on different tasks and received performance-contingent payments that varied in amount from small to very large relative to their typical levels of pay. With some important exceptions, very high reward levels had a detrimental effect on performance.

'The ostrich effect: selective attention to information', Niklas Karlsson, George Loewenstein and Duane Seppi, *Journal of Risk and Uncertainty* (2009), 38, 95–115, <u>http://www.springerlink.com/content/rm161k6622p81670/</u>

This paper develops a model which predicts that individuals monitor and attend to information more actively when given preliminary good news, but 'put their heads in the sand' and avoid additional information when given adverse prior news. The authors test for such an 'ostrich effect' in a finance context, examining the account-monitoring behaviour of Scandinavian and American investors in two data sets. Consistent with the model's prediction, investors monitor their portfolios more frequently in rising markets than when markets are flat or falling.

'Narrow bracketing and dominated choices', Matthew Rabin and Georg Weizsäcker, *American Economic Review* (2009), 99, 1508–43, <u>http://www.econ.berkeley.edu/~rabin/rw29\_aer.pdf</u>

When making multiple decisions, individuals who 'narrowly bracket' (evaluate decisions separately) sometimes make dominated combined choices – a combination that is inferior to some other combination when all choices are evaluated together. In experiments conducted by the authors, 89% of decisions were made with narrow brackets.

'A theory of medical decision making and health: fuzzy trace theory', Valerie F. Reyna, *Medical Decision Making* (2008), 28, 850–65, <u>http://mdm.sagepub.com/content/28/6/850.short</u>

The main idea of 'fuzzy trace' theory is that people rely on the gist of information rather than all the precise details when making decisions. This paper uses fuzzy trace theory to explain how medical and health information is processed and influences behaviour. The paper recommends formatting information so that the relevant gist pops out, providing cues that remind people of knowledge that they already have, and disentangling classes and representing them discretely to improve probability judgements.

#### Theme 4: Changing behaviour for positive educational outcomes

**'Personality psychology and economics',** Mathilde Almlund, Angela Lee Duckworth, James Heckman and Time Kautz, **IZA Discussion Paper 5500 (2011)**, <u>http://ideas.repec.org/p/iza/izadps/dp5500.html</u>

Measured personality traits are powerful predictors of a wide range of behavioural outcomes, including academic and economic success, health and criminal activity. Moreover, there is suggestive evidence that some personality traits causally impact behavioural outcomes and that personality traits can be affected by interventions over long periods of time. This suggests a potentially fruitful path for policy interventions. The paper also discusses how personality traits can be fitted into economic models, how to measure them, evidence regarding their stability, their influence on outcomes including educational ones, and how malleable they are at different stages in life.

### 'Longer-term impacts of mentoring, educational services, and incentives to learn: evidence from a randomized trial', Núria Rodríguez-Planas, IZA Working Paper 4754 (2010), <u>http://ideas.repec.org/p/iza/izadps/dp4754.html</u>

This study evaluates the impact of an after-school programme on disadvantaged high-school youths' educational and long-term employment outcomes. The programme offered mentoring, educational services and financial rewards with the aim of improving high-school graduation and post-secondary schooling. While the programme had immediate positive effects on the targeted outcomes, the study finds those effects to be short-lived. The author argues that the financial rewards may have replaced young people's intrinsic motivation by extrinsic motivation, which could explain the detrimental long-lived employment impact for males.

'Conditional cash penalties in education: evidence from the Learnfare experiment', Thomas S. Dee, *Economics* of *Education Review* (2011), 30, 924–37, <u>http://www.sciencedirect.com/science/article/pii/S0272775711000975</u>

This study evaluates a conditional cash penalty programme that sanctions a family's welfare grant if the teenagers fail to meet the school attendance targets. The experimental evidence points to a positive impact on school enrolment and attendance.

#### 'Student effort and educational attainment: using the England football team to identify the education production function', Robert Metcalfe, Simon Burgess and Steven Proud, CMPO Working Paper 11/276 (2011), http://www.bristol.ac.uk/cmpo/publications/papers/2011/wp276.pdf

This study uses a sharp, exogenous and repeated change in the value of leisure to identify the impact of student effort on educational achievement. The treatment arises from the partial overlap of the world's major international football tournaments with the exam period in England. The authors find a strongly significant effect: the average impact of the fall in effort is 0.12 standard deviations of student performance, and it is significantly larger for male and disadvantaged students. This impact is as great as that of many educational policies.

#### 'No child left behind: subsidized child care and children's long-run outcomes', Tarjei Havnes and Magne Mogstad, *American Economic Journal: Economic Policy* (2011), 3(2), 97–129

This paper examines a large-scale expansion of subsidised childcare in Norway, addressing the impact on children's long-run outcomes. The estimates show that subsidised childcare has strong positive effects on children's educational attainment and labour market participation, and also reduces welfare dependency. Subsample analyses indicate that girls and children with low-educated mothers benefit the most from childcare.

'Is gifted education a bright idea? Assessing the impact of gifted and talented programs on achievement', Sa A. Bui, Steven G. Craig and Scott A. Imberman, NBER Working Paper 17089 (2011), <a href="http://www.nber.org/papers/w17089">http://www.nber.org/papers/w17089</a>

This paper determines how the receipt of gifted and talented (GT) services in the US affects student outcomes. The authors identify the causal relationship by exploiting a discontinuity in eligibility requirements and find that, for students on the margin, there is no discernible impact on achievement even though peers improve substantially.

**`Explaining Charter School Effectiveness'**, Joshua A. Angrist, Parag A. Pathak and Christopher R. Walters, NBER Working Paper 17322, (2011), <u>http://www.nber.org/papers/w17332</u>

Comparisons of those who did and did not win charter school admissions lotteries in Massachusetts suggest that urban charter schools boost student achievement. In Explaining Charter School Effectiveness, the authors finds that student demographics are related to the extent of this improvement: urban charter schools are most effective for non-whites and low-baseline achievers. They also find that while over-subscribed urban charter schools that admit students by lottery have produced the largest improvement in student achievement, non-urban charter schools are uniformly ineffective in raising measured achievement.

<u>Subjective and objective evaluations of teacher effectiveness: Evidence from New York City'</u>, Jonah Rockoff and Cecila Speroni, Labour Economics (2011), 18(5), <u>http://www.sciencedirect.com/science/article/pii/S0927537111000315</u>).

A substantial literature documents large variation in teacher effectiveness at raising student achievement, providing motivation to identify highly effective and ineffective teachers early in their careers. Using data from New York City public schools, this papers estimates whether subjective evaluations of teacher effectiveness have predictive power for the achievement gains made by teachers' future students. They find that these subjective evaluations have substantial power, comparable with and complementary to objective measures of teacher effectiveness taken from a teacher's first year in the classroom.

# Theme 5: Overarching projects: behaviour change in general, and data development

**'Who is (more) rational?'**, Syngjoo Choi, Shachar Kariv, Wieland Müller and Dan Silverman, **Working Paper (2010)**, <u>http://www.cemmap.ac.uk/forms/experiments\_2010/choi.pdf</u>

This paper conducts a large-scale field experiment to test for standard rationality and examines what kinds of individuals are more rational. It finds that high-income and high-education subjects display greater levels of consistency than low-income and low-education subjects, that men are more consistent than women, that young subjects are more consistent than older subjects and that higher wealth is also associated with greater consistency.

'Psychology and economics: evidence from the field', Stefano DellaVigna, *Journal of Economic Literature* (2009), 47, 315–72, <u>http://www.aeaweb.org/articles.php?doi=10.1257/jel.47.2.315</u>

This is a well-cited literature review of empirical evidence from behavioural economics. It covers self-control problems, risk preferences, social preferences, overconfidence, law of small numbers, projection bias, framing, limited attention, menu effects, persuasion, social pressure and emotions.

# **'Cognitive abilities and behavioral biases'**, Jörg Oechssler, Andreas Roider and Patrick W. Schmitz, *Journal of Economic Behaviour & Organization* (2009), 72, 147–52, <u>http://ideas.repec.org/a/eee/jeborg/v72y2009i1p147-152.html</u>

This study investigates whether cognitive abilities are related to behavioural biases well-established in the field of behavioural economics. It finds that people with higher cognitive abilities are significantly less prone to some biases, but not all, and that the biases remain substantial for highly intelligent people.