PSYCHOLOGY MISCELLANY

No.52 - October 2013

RATIONAL AND IRRATIONAL THINKING, MISINFORMATION AND SOCIAL COGNITION

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ISSN: 1754-2200

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A complete listing of his writings at http://kmbpsychology.jottit.com.

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1. INTRODUCTION

Computers are rational in the sense that they transmit information without reference to meaning. They are true information-processors (Denning and Bell 2012). But human beings, even when believing that they are being rational, place meaning on to information. This meaning can work as a shortcut to process information, but it also shows that everyday thinking is far from rational [1].

A scenario like "Prisoner's Dilemma" (PD) can be used to study "rational thinking". Two prisoners are questioned separately about their joint crime, and there are different outcomes depending on whether one, both or neither confess (figure 1).

For example, if both prisoners do not confess, they are freed, but if they both confess, then there is a short prison sentence for each. However, if one confesses and the other does not, the confessor is freed and the non-confessor is given a long sentence.

	Prisoner A: Confess	Not confess
Prisoner B:		
	short sentence	**Maximum sentence**
Confess	short sentence	Freed
	Freed	**Freed**
Not confess	Maximum sentence	Freed

Figure 1 - Prisoner's Dilemma matrix.

A purely rational approach (based on self interest) is to confess because the cost of not confessing (if the other prisoner confesses) is greater than the benefits of both not confessing (Musser 2012).

In "real-life" individuals take into account factors like the level of trust of the other prisoner, and are not rational. Studies (eg: Pothos and Busemeyer 2009) of individuals playing the PD game have found that if a player is less sure of the other player's response, the former is more likely to not confess, which is completely opposite to logic (Musser 2012).

The theory of cognitive dissonance (Festinger 1957) is a prime example of "irrational behaviour". Individuals

[1] There are implications to such human behaviour (appendix A).

who hold strong beliefs that are disconfirmed, in order to cope, become more ardent about their beliefs. Festinger et al (1956) participant-observed a small religious cult that believed the world would end on a certain day with a flood (while the group members would be rescued by aliens). "After the predictions of the prophecy failed to materialise, the group proclaimed that the aliens had spared Earth because of the group's dedication. Moreover, whereas the group had been secretive and had actively discouraged proselytising prior to the disconfirmation, subsequently the group engaged in active advocacy" (Gal and Rucker 2010 p1701). This is contrary to "rational thinking".

Recently, Gal and Rucker (2010) performed three experiments to show that when individuals' confidence in their beliefs are shaken, they are more likely to argue for those beliefs than when they are confident about their beliefs.

In the first experiment, 88 US business students were asked to argue for their views about the use of animals in testing consumer products. The confidence of the participants was challenged by getting half of them to write with their non-dominant hand. These individuals wrote significantly more words to argue for their view than participants writing with their dominant hand.

There is a question of the validity of confidence about beliefs and hand used to write. So, in the second experiment with 151 US adults, confidence was challenged by asking half the participants to think about a situation in their lives where they felt uncertain (compared to certain) before writing about vegetarianism. Participants in the uncertain condition wrote significantly more words about their beliefs than in the certain condition.

In the final experiment, 113 US undergraduates had to argue for using a Mac or Windows-based PC after a certainty or uncertainty priming. This time they were told that an open-minded or close-minded individual would be reading their argument. The participants in the uncertain condition, this time, only wrote significantly more words for an open-minded reader.

The researchers proposed that individuals use advocacy of their beliefs to restore shaken confidence because attitudes are closely linked to the self. Thus protecting beliefs maintains the self.

2. LANGUAGE

The language used to communicate a message can influence how the information is perceived. This is called framing and is common in political communications (Matlock 2012).

The grammar used to describe an event can be part of the framing. Fausey and Matlock (2011) gave participants information about a fictitious political candidate, and varied one sentence. Half the participants read that the candidate was "having an affair" last year (past progressive tense - conceptualised as an ongoing event), while the other participants read that the candidate "had an affair" last year (simple past tense - conceptualised as a completed event). The latter group were more likely to vote for the candidate than the former group. The past progressive tense can suggest that if the event is not ongoing, it could recur in the future (Matlock 2012).

Matlock et al (2012) reported that using different grammar in a question can influence recall. Participants watched a short video of a car crash, and then were asked, "tell what was happening" or "tell what happened". The former question (past progressive tense) elicited more motion verbs in the description of the video, and more mentions of reckless driving than the simple past tense question.

Metaphors can also influence how information is perceived. For example, politicians use a lot of motion metaphors (eg: "we are running a good race"; "we are moving forward with progress"). Neuroimaging shows that areas of the brain that perceive motion can be activated by motion metaphors (Matlock 2012) [2].

From the viewpoint of discursive psychology, language is not a means of discussing factual events, but it is a way to construct the social world, the self, and justification for behaviour. Thus individuals are doing something with their "talk" (eg: social accountability).

Locke and Edwards (2003) showed an example of this process with their analysis of President Clinton's responses to official questions about his relationship with Monica Lewinsky. As Clinton was answering the questions, he was not simply recalling events, reporting facts, or expressing opinions, but he was portraying himself in the context of discourses about the relationship (eg: misuse of power by the President).

Locke and Edwards (2003) drew out three themes from their analysis:

a) "The use of limited claims to knowledge and memory" - When Clinton used terms like "remember",

[2] Similarly, studies have shown that the brain responds to social rejection with activity in the same areas as in physical pain (Raffensperger 2012). For example, Kross et al (2011) compared brain activity when receiving a painful heat stimulus to the arm, and when thinking about a recent relationship break-up. The dorsal anterior cingulate cortex and the anterior insula were activated in both cases (Raffensperger 2012).

"recall", or "forget" in relation to past events, they "are not merely references to inner, psychological processes, but coins of verbal exchange that have a public, discursive use in managing accountability" (p244).

Furthermore, Locke and Edwards said: "Memory limitations feature as a rhetorical resource, in avoiding accountability for forgotten actions, in reflexively displaying concern for strict accuracy, and in providing for 'plausible deniability' should disconfirming details subsequently emerge" (p243).

b) "Normalising actions and events" - Clinton used his answers to establish that certain of his behaviours were normal (and thereby acceptable, or, at least, less open to criticism). For example, meeting with Monica and giving her gifts were presented as normal behaviour with staff members rather than specific actions on his part (ie: his motives). Locke and Edwards observed that "Clinton's gift giving is 'scripted' as routine rather than done on this particular occasion for special motives. In contrast, it was a normative act of reciprocity, 'the right thing to do'..., something he has 'always' engaged in..., something done not only with special persons but with 'a lot of people'..., and something that is quite normal and proper not merely for him and Lewinsky personally, but for them via their general category memberships 'a man' and 'a woman'... Those are offered as the relevant categories for understanding Clinton's actions – a man and a woman exchanging gifts" (p248).

c) "Emotion and blame" - Clinton used his answers to achieve a particular aim. Locke and Edwards said: "In portraying Lewinsky as irrational, emotional and motivated by personal problems, Clinton reflexively defines himself, in contrast, as rational, behaving properly (eventually, at least), and concerned for the welfare of others, including her" (p249).

Also: "Actions can be descriptively built as either exceptional or typical of the actor, and therefore stemming either from circumstance or from disposition or character... Clinton used the typical-dispositional link to depict Lewinsky's volatile emotions as stemming from her character, rather than being understandable reactions to things he did" (Locke and Edwards 2003 p253).

From another point of view, Pagel (2012) argued that the many human languages developed as a way to establish and confirm group identity, and communicate within the group rather than between groups. "How we speak is a continual auditory reminder of who we are and, equally as important, who we are not. Anyone who can speak your particular dialect is a walking, talking advertisement

for the values and cultural history you share. What's more, where different groups live in close proximity, distinct languages are an effective way to prevent eavesdropping or the loss of important information to a competitor" (Pagel 2012 p40).

3. MISINFORMATION

False information whether propagated by mistake or deliberately by vested interests [3] can be difficult to counter because of a resistance to correction in some cases. The reasons for this "continued influence effect" can be viewed at a social level and an individual-cognitive level (Lewandowsky et al 2012).

In the former case, misinformation can be spread throughout society by the mass media and the Internet as information is passed on. But it also occurs through fiction, particularly fiction that is based in "everyday reality". Marsh et al (2003) found that individuals recalled fictional information accurately even when it contradicted "common world knowledge" (appendix B).

Furthermore, Lewandowsky et al (2012) described a "fractionated information landscape" where individuals only listen to certain sources who can selectively channel information.

Misinformation is also perpetuated by cognitive processes that perceive, recall, and make sense of stimuli about the outside world. Information is assessed in relation to the currently held worldview, for instance - ie: the compatibility with current knowledge.

Lewandowsky et al (2012) added other criteria used to assess new information:

- Is it a coherent story?
- Is it a credible source?
- Do others believe it?

Retraction of information tends not to be effective in correcting misinformation (table 1). For example, Johnson and Seifert (1994) presented participants with a story of a warehouse fire initially thought to be due to negligent storage of flammable materials. Then half the participants are given information about another cause of the fire (retraction). Later, in a memory test, these participants still recalled the original information similar to the participants who did not have a retraction. One reason is that individuals build mental models of events, and a retraction leaves a gap that

[3] Bedford (2010) called the deliberate creation of mistake beliefs - "agnogenesis".

makes the mental model incoherent. Thus the misinformation is maintained to keep coherence in the mental model (Lewandowsky et al 2012).

An alternative explanation relates to memory. In outlining a retraction, the original information is reinforced and the memory link strengthened - for example, in explaining that flammable materials did not cause the warehouse fire, there is a repetition of the idea that flammable materials were involved.

Shtulman and Valcarcel (2012) found that correct information does not entirely remove misinformation in the case of scientific knowledge - "scientific knowledge serves to mask, rather than replace, one's initial intuition".

The researchers compared 150 US psychology undergraduates on their speed of verification of two types of scientific facts (same as intuition and challenging intuition). The first set of facts are common to intuition and science (consistent) (eg: "the moon revolves around the earth"), while in the latter case, science contradicts intuition (inconsistent) (eg: "the earth revolves around the sun").

There were 200 statements from 10 areas of science made up of four types - true to intuition and science (eg: "a moving bullet loses speed"), false for both (eg: "a moving bullet loses weight"), true to intuition but false to science (eg: "a moving bullet loses force"), and vice versa (eg: "a moving bullet loses height").

Overall, participants were slower to verify statements where science challenged intuition than statements that were the same for intuition and science [4]. The researchers argued that this was because the intuitive beliefs were still present and produced a cognitive conflict, thereby slowing down reaction time for inconsistent statements (ie: "the 'tug' of a previously discarded theory"; Shtulman and Valcarcel 2012).

Table 1 - Shtulman and Valcarcel (2012).

Lewandowsky et al (2012) outlined three ways to correct misinformation effectively:

i) Pre-exposure warnings - Warn individuals at the time of receiving the misinformation that it could be incorrect. "People by default expect presented information to be valid, and an a priori warning can potentially change that expectation" (Lewandowsky et al 2012).

ii) Repeated retractions.

iii) Filling the gap - Providing an alternative explanation that gives coherence to the mental model [5] [6].

[4] Mean of 3.3 seconds for consistent statements vs 3.8 for inconsistent where statements true, and 3.5 and 4.0 seconds respectively for false statements.

[5] Misinformation will also not have a continued influence in certain circumstances (there are "boundary conditions") (Ecker et al 2011) - the misinformation is irrelevant or unimportant to a focal event, and where there is suspicion about the motives of the provider of the misinformation.

But retractions can produce the "backfire effect" (Nyhan and Reifler 2010) [7]. Supporters of a particular worldview become more committed to the misinformation (that fits) after a retraction compared to no retraction. Personal beliefs/worldview can "facilitate the acquisition of attitude-consonant misinformation, increase reliance on misinformation, and inoculate against correction of false beliefs" (Lewandowsky et al 2012).

4. POSITIVE THINKING ABOUT THE FUTURE

Positive thinking about the future (ie: imagining a goal happening) has been viewed as beneficial, but it can be demotivating as well (Katsnelson 2011).

Kappes and Oettingen (2011) summarised: "Are job-seekers more likely to find work if they visualise themselves as future CEOs, or question whether they really will attain the ideal position? Do lovesick teens realise more romantic success when they picture themselves walking down the aisle toward their crush, or imagine themselves awkwardly stuttering as they invite him on a study date? Although it is tempting to believe that simple positive visions engender actual success, research finds something different. Specifically, fantasies that are experienced as positive – those that depict an idealised version of future events – are associated with poor achievement..." (p719). That is not necessarily because the fantasies are unrealistic, but are "the best and most wonderful form of the future, which may be realistic or unrealistic" (Kappes and Oettingen 2011) [8].

The problem with positive idealised fantasies is that the individual does not think about how to achieve the desired outcome, particularly the practical path there (including obstacles and setbacks).

Oettingen and Mayer (2002) explored this idea

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[6] Eg: Ecker et al (2011) (appendix C).

[7] Lewandowsky et al (2012) distinguished three types of backfire effect:

- Familiarity backfire effect - repeating the misinformation to counter it increases familiarity. Ecker et al (2011) noted: "public information campaigns are potentially ineffective or even counter-productive if they list 'facts and myths about...', because attempts to explicitly discredit false information necessarily involve the repetition of these myths, which in itself strongly reinforces belief in them" (p284).
- Overkill backfire effect - simple misinformation is more attractive than complex retractions.
- Worldview backfire effect - retractions than threaten a worldview can lead to a strengthening of the support for the misinformation.

[8] This type of thinking goes with other ways of viewing the world that justifies the self as a good person (eg: "thrift chic"; appendix D).

experimentally. They showed that the more positive the fantasy, the less effort is invested in achieving it and thus the lower rate of success. For example, Oettingen and Mayer (2002) asked college students to imagine the ideal of dating a desired classmate. The more positive the fantasy, the less likely the actual date to have occurred by five months later. Other scenarios used included getting the ideal job, and losing weight to become the ideal weight.

But why does the idealised positive fantasy lead to less school success? Kappes and Oettingen (2011) proposed an answer related to motivation and energy. Positive fantasies produce an "as if" way of thinking - "as if" the goal has been achieved. "Positive fantasies about the future make energy seem unnecessary, and thus energy should not be mobilised. Indeed, by allowing people to mentally consummate a desired future, positive fantasies should be followed by the relaxation that accompanies actual achievement, rather than the effort that precedes it" (Kappes and Oettingen 2011 p720).

Kappes and Oettingen (2011) performed four experiments to explore the energy of participants after fantasising. In the first experiment, energy was measured by systolic blood pressure as female undergraduates at a New York university were asked to create a positive fantasy about looking good in high-heeled shoes. The control condition involved questioning whether wearing high-heels was glamorous. There were 164 participants divided into two independent conditions.

Between the baseline measure of blood pressure before the experiment and the measure after the fantasy, women in the positive fantasy condition had a significant decrease compared to no change in the questioning fantasy condition.

In the second experiment, energy was measured by self reports of feeling "excited", "enthusiastic" and "active" on a five-point scale. Fifty undergraduates (both male and female) from the same university fantasised about winning a prize in an essay competition or not before being told to write the essay. They did not write the essay, but were asked about the energy to do so. The feeling of energy after the positive fantasy was significantly lower than in the control condition (mean: 2.18 vs 2.75).

The third experiment actually measured how much participants achieved in a week. Forty-nine undergraduates of both sexes fantasised about the ideal achievements in the coming week or just daydreamed about the week. One week later the participants were asked to rate their actual achievements on seven-point scales.

Participants in the fantasy group achieved less than the control condition (mean: 5.74 vs 6.57).

In the fourth experiment, energy was again measured by systolic blood pressure. Eighty undergraduates of both sexes either fantasised about examination success close to examination time or about drinking water (when thirst experimentally induced from eating salty crackers). In both cases, participants had a lower blood pressure between baseline and post-fantasy.

Overall, the experiments provided evidence of "a causal relationship between positive fantasies about desired futures and low energy devoted to their realisation. These findings build on previous research, which has either used correlational designs with self-rated positivity of fantasies as a predictor..., or has induced positive mental images in participants pre-selected for individual differences... These findings indicate that engaging in fantasies that depict an idealised future, even during a brief experimental manipulation, has a detrimental effect on energisation" (Kappes and Oettingen 2011 p727).

4.1. Negative Expectations

Generally individuals recall positive experiences and events more often than negative ones, and pain, for example, is often forgotten in pain-free times [9]. Even when unpleasant experiences are anticipated again "people may choose to remember an experience as less aversive if they expect to continue the experience, thus reducing expected disutility and increasing the likelihood of repeating the experience" (Galak and Meyvis 2009). For example, Gibbs (2005; quoted in Galak and Meyvis 2009) found that individuals rated a bitter drink more positive if they expected to consume it again many times as compared to once more.

Read and Loewenstein (1999) called this the "cold-to-hot empathy gap". Individuals who had to put their hand in cold water recalled the experience as less unpleasant later. When in a "cold" (neutral) state, it was difficult to recall the "hot" (aroused) state.

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[9] Negative expectations can also be associated with "self-sabotage".

Hoban (2007) proposed a number of causes for self-sabotaging behaviour including:

- An individual expecting negative things experiences positive ones, so sabotages to reduce the conflict.
- Impostor syndrome - a successful individual has a fear of being found out (as not really successful) and sabotages to avoid this.
- Success produces change and fear of that (or fear of others' reactions) produces sabotaging behaviour.
- Product of overanalysis and rumination.

But this is not always the case. Negative experiences are recalled as worse if the individual expects that experience again in the future (Kloc 2011).

Galak and Meyvis (2009; 2011) explored this in a number of studies. In the first experiment, thirty undergraduates listened to five seconds of an irritating noise (vacuum cleaner), then half were told that they would hear ten minutes more. At this point, all participants rated the unpleasantness of the noise on a nine-point scale. Those expecting the hear the sound again rated it as significantly higher than the control (mean: 5.92 vs 4.56), and were willing to pay significantly more money not to hear it ($3.62 vs $0.94).

The researchers explained the behaviour as "bracing" - preparing for the worst by remembering the past pain as more unpleasant. Denying the time to brace "turns off" the behaviour. This is opposed to closing the "cold-to-hot empathy gap", which may also explain the dread of anticipated pain (Galak and Meyvis 2009).

In study 2, which was the basis of a number of the subsequent experiments, 44 undergraduates completed a boring computer task before being told that they would be doing more of the same or not. Participants who expected to be doing more rated the task as significantly more irritating, annoying, and boring than controls (overall mean: 7.26 vs 6.56 out of 9).

Study 3 involved 112 more undergraduates competing the same boring computer task before being told of one of four different things - more of the same task (more condition), no more (done condition), more of a similar task to follow (more of other condition), or no information (control condition). Ratings of the unpleasantness of the task was highest in the more condition (mean: 7.75 out of 9), followed by the done condition (6.21), control condition (5.79), and more of other condition (4.94).

Galak and Meyvin (2011) observed: "The fact that remembered aversiveness was affected only when participants anticipated an identical experience provides some initial insight into the underlying mechanism of the effect. Specifically, the lack of an anticipation effect in the more-of-other condition is easier to reconcile with a bracing account than with an empathy gap account of the effect. Bracing for an upcoming task by imagining it to be aversive necessarily implies that the prior experience with that same task was dreadful as well but does not necessarily affect recall of a different task. In contrast, according to the empathy gap account, anticipating an aversive task makes it easier for people to re-imagine the aversiveness of the previous task by putting them in a hot state, which can also be created by

anticipating a task that is different from the original task" (p67).

In the fourth experiment with 154 undergraduates, some of the participants were not given the opportunity to brace themselves for more of the boring task. After the boring computer task, they were told that there would be more of the same task with a few minutes to think about it (more expected condition) or immediately (more unexpected condition) before rating the unpleasantness of the task. The mean rating of the task was higher in the more expected than more unexpected condition (7.99 vs 7.21). This suggested that stopping the opportunity to brace reduced the unpleasant recall of the task.

Experiment 5 reduced the opportunity to brace by asking participants to complete an ego-depleting task (ie: involving concentration - inducing cognitive fatigue) before rating the unpleasantness of the boring computer task. The 174 undergraduates were divided into four independent groups after completing the task. They were either told that there would be more of the same or not, and completed an ego-depleting task or not. The rating of unpleasantness of the task was highest in the more/no ego-depletion condition (mean: 7.46) compared to 6.79 in the more/depletion condition.

The sixth experiment with 160 more US students compared the rating of unpleasantness of a boring task and an enjoyable computer task when participants were told that there is more to come or not. Not surprisingly, the rating of unpleasantness occurred for the boring task but not the enjoyable one. this showed that bracing only occurs with anticipated unpleasant experiences.

Study 7 tested whether bracing may be a behaviour for certain individuals only by investigating such behaviour towards potentially bad examination results. Bracing behaviour here was compared with the same behaviour in the more/done experiment. Individuals in the more condition were more likely to brace in the experiment and in real life, but not for the participants in the done condition. This suggested that bracing was not a characteristic of some individuals. "Rather, only when an unpleasant experience is expected to return do people who tend to prepare for the worst remember this experience as more aversive than do those who hope for the best" (Galak and Meyvin 2011 p70).

Study 8 was a quasi-experiment that used a real-life situation of painful menstruation among women. One hundred and eighty female undergraduates were asked online to rate the painfulness of the experience and the dates of the last and next menstruations. The women

recalled the experience as more painful if within 3-4 days of the next one than ten days or more away (mean: 4.61 vs 4.91 [10], out of 9, where 1 = "I do not tolerate pain well" and 9 = "I tolerate pain well").

The ninth study was an informal field study, where individuals running in Central Park in New York City were asked to rate how hard they perceived a hill section. The researchers shouted to solo runners either just before the hill, half way up, or at the top. The mean rating (out of 5, where 5 = "very hard") was significantly higher just before (similar to the more condition in the laboratory experiments) than at the top (3.39 vs 2.55; and 3.13 for during).

Overall, Galak and Meyvin (2011) concluded from their seven laboratory experiments and two quasi-experiments that people's memory for an aversive experience becomes more negative when they anticipated returning to that experience", and this occurs through "activating a strategic bracing mechanism".

How do Galak and Meyvin (2011) explain the difference in their findings to those studies like Gibbs which found a more positive attitude towards past aversive events (strategic optimism)? Galak and Meyvin (2011) answered: "we speculate that people may brace for the worst when the anticipated aversiveness is below a certain threshold but that they may be more likely to engage in strategic optimism instead when the anticipated experience is extremely aversive – because of its intensity, its duration, or the number of repetitions" (p73). In other words, long-term aversive events are coped with by recall as less unpleasant, and short-term aversive events are recalled as more unpleasant.

These studies showed "another instance in which people strategically alter their memory for their past appraisals - not to create the illusion of consistency but rather to steel themselves against future harm" (Galak and Meyvin 2011 p74). Bracing can be helpful as part of "defensive pessimism" (Norem and Cantor 1986) in coping with anticipated negative events.

Galak and Meyvin (2011) noted the implications of their findings for unpleasant medical procedures, for example: "it may be advisable for medical practitioners to downplay the anticipation of the next procedure... and instead focus on the completion of the first procedure... In this way, patients are likely to remember the original experience as having been less aversive and are thus more likely to pre-commit to an often necessary follow-up" (p73).

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[10] The mean for all women in the study was 4.79, and 5.55 for 315 other women currently undergoing menstruation.

5. CONSIDERATION OF FUTURE CONSEQUENCES

Anderson and Bushman (2002) proposed the "General Aggression Model", which included personal variables and situational variables when explaining acts of aggression. Bushman et al (2012) studied the personal variable of "consideration of future consequences" (CFC) and the situational variable of intoxication in the laboratory.

CFC is the stable characteristic of how much an individual focuses on the future consequences of their current behaviour. It is measured by the Consideration of Future Consequences (CFC) scale (Strathman et al 1994), which has twelve items (eg: "I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years") scored from 1 (extremely uncharacteristic) to 5 (extremely characteristic). A higher score means a greater CFC.

The alcohol myopia theory (Steele and Josephs 1990) proposed that alcohol leads to a focus of attention on the most salient features of a situation while ignoring others. For example, in a crowded pub where somebody accidentally stands on the foot of a drunk individual, that individual focuses on the provocation of the act rather than other situational factors (eg: crowded).

Bushman et al (2012) predicted that intoxicated, low CFC scorers will be most aggressive. Four hundred and ninety-five "social drinkers" in the USA were recruited for the experiment (ie: no alcohol problems). After completing the CFC scale, participants were given either alcohol mixed with orange juice or orange juice smelling of alcohol (placebo). They had twenty minutes to consume the equivalent of 3-4 mixed drinks.

Aggression was measured by a reaction time game where the winner could give an electric shock to the loser. This was done via the computer and there was no opponent really. In 34 trials, the participants randomly won half. The duration of the shock and the intensity given after winning were the specific measure of aggression.

Individuals with a low CFC score who consumed alcohol were significantly more aggressive than those who consumed the placebo drink, and high CFC scorers in both conditions.

6. PLANNING

Intentional planning is better than not planning, but it can mean less flexibility when circumstances change (Kaufman 2012). Planning focuses attention, but can mean that alternatives are not considered after the plan is made.

Masicampo and Baumeister (2012) showed this in a

laboratory experiment which involved the task of finding answers to various questions on the Internet with the goal of looking up actor Bill Murray's year of birth. There were four independent conditions - make a plan or not to achieve the goal, and sufficient or insufficient time to answer all the questions. In the planning condition, participants were encouraged to decide on a website to use to find the birth year at the beginning of the task. The participants were 102 undergraduates at a university in the USA.

It was predicted that with sufficient time planning would be better than no planning. But the opposite would be true with insufficient time. "The last website participants had access to after a time warning was one that participants could have used to look up Bill Murray's birth year. It was expected that most participants would recognise that fact and would therefore use the website to look up the information. However, it was predicted that participants who made a plan to obtain the information elsewhere (ie: at a website that would normally have been visited later) would fail to notice and capitalise on the useful alternative" (Masicampo and Baumeister 2012 pp42-43).

Participants with a plan were significantly more successful in finding Bill Murray's birth year than without a plan when there was sufficient time - 95.5% vs 68.0% correct. But in the conditions with insufficient time, only 36.7% of the participants with a plan were successful compared to 71.4% without.

Participants in the insufficient conditions who did not achieve their goal were questioned afterwards about their experiences. Those with a plan were more likely to refer to "inattention" or "obligation" reasons for failing, while no-planners gave "memory lapse" and "priority shift" explanations (table 2). Independent raters allocated the participants' spontaneous explanations into the four categories and scored them on a scale of 1 to 5.

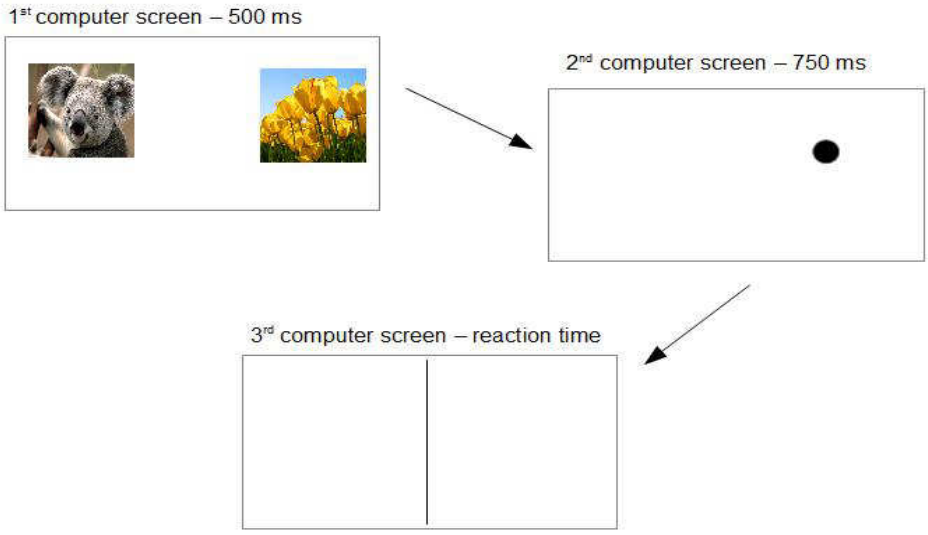
- Inattention - focusing on own website chosen to find Murray information and not realising that the current site would tell them the answer.
- Obligation - feeling the need to answer the other questions first by finding the Murray information.
- Memory lapse - forgot about finding Murray information.
- Priority shift - more concern about questions on screen.

Table 2 - Categories of explanations given for failing to achieve their goal.

7. POSITIVE ATTENTION BIAS

Attention towards different stimuli is not distributed evenly, and individuals may have a bias towards positive material and away from negative material or vice versa. Fox et al (2009) presented evidence that this difference in bias is related to two versions of a part of a gene involved in transporting the neurotransmitter serotonin in cells in the brain [11]. Individuals who have a "long version" had a bias towards positive emotional material and away from negative emotional material, whereas those individuals carrying the "short version" did not have that bias [12].

The researchers collected DNA samples from saliva or eyebrow hair of 97 participants (probably British students). Biased attention was measured by the dot-probe paradigm. This uses the reaction time to spot the position of a dot on a computer screen when presented after a pair of pictures (figure 2). The pictures were either negative (eg: spider), positive (eg: chocolate), or neutral emotional stimuli. If individuals had a bias towards positive material, for example, they would be quicker to spot the dot after a positive picture than after a negative or neutral one. If they had a bias against negative material, they will be slower to react after a negative picture than a positive or neutral one.



(Based on Fox et al 2009 figure 1 p1748)

Figure 2 - The dot-probe paradigm.

[11] Promotor region (5-HTTLPR) of human serotonin transporter gene (5-HTT, SERT, SLC6A4 gene) on chromosome 17 (Fox et al 2009).

[12] The length of the allele (version) influences the amount of serotonin at the synapse (Fox et al 2009).

Sixteen participants had the "long version" of the gene (LL - long version from each parent), and they were significantly slower to spot the dot after a negative picture (bias against negative material) (mean: - 18.3 attention bias score where 0 is no bias [13]), and significantly faster to spot the dot after a positive picture (bias towards positive material) (mean: +23.5 [14]). The other participants with the "short version" showed no significant differences in reaction time [15].

Other studies have found that the "short version" of the gene is associated with depression in certain circumstances. For example, Caspi et al (2003) reported that individuals with this version were more likely to experience depression and suicide attempts in response to major traumatic life events (in a twenty-year longitudinal study) than "long version" carriers.

8. FUNDAMENTAL ATTRIBUTION ERROR

The fundamental attribution error (FAE) is the "general tendency to overestimate the importance of personal or dispositional factors relative to environmental influences" (Ross 1977 p184). It is also called "dispositionism": "people (1) infer dispositions from behaviour that is manifestly situationally produced, (2) overlook situational context factors of substantial importance, and (3) make overly confident predictions when given a small amount of information" (Ross and Nisbett 1991 p126).

It is argued that the FAE is independent of any context because it is a product of how cognitive processes work (Ross and Nisbett 1991). Sabini et al (2001) challenged the inevitability of the FAE, and called such a view the "Really FAE".

Sabani et al (2001) summarised their disagreement with Ross and Nisbett (1991) thus: "They believed that in a variety of studies, people go wrong in their predictions (understandings) because they have a general tendency to attribute behaviour to dispositions rather than to situations. We think, on the other hand, that the problem people have is not that they have a general tendency to attribute one way or another, but that they underestimate the importance of certain specific factors" (p2).

Here are three of the classic studies of FAE and

[13] Mean reaction time with negative pictures compared to neutral pictures.
[14] Mean reaction time with positive pictures compared to neutral pictures.
[15] There were 36 participants with SS (both short) and 45 with SL (one short and one long allele).

Sabani et al's (2001) alternative explanation:

1. Jones and Harris (1967).

Participants are given an essay, written (supposedly) by a student, expressing a pro-Castro attitude, and they were told that the writer was instructed to express this attitude. When asked to guess the writer's attitude towards Fidel Castro, because of the FAE, the participants attributed a pro-Castro attitude more than the control group (which had no essay to read). In other words, the external cause of the behaviour (ie: instruction to write essay in particular way) was underestimated.

Sabini et al (2011) argued that the participants' mistake was not the FAE, but "the failure to realise how easy people (or at least students) are to manipulate". In particular, the avoidance of embarrassment makes individuals easy to manipulate.

2. Ross et al (1977).

In a quiz game, pairs of players were randomly assigned to be the "questioner" (and make up questions) or the "contestant". An observer then rated the level of knowledge of the two players relative to the average student. The questioner was rated as more knowledgeable than the contestant. "This result is often said to show that participants overestimated the importance of an internal cause (general knowledge) of what they observed and underestimated the importance of an external cause (the nature of the tasks), once again displaying the FAE" (Sabini et al 2001 p6). Gilbert and Malone (1995) pointed out that the observers ignored the situational factors - ie: the difficulty of the task, which was more for the contestants.

Sabini et al's (2001) interpretation of the results related to social desirability. The questioners were rated as more knowledgeable than the average student, while the contestants were rated as the same as the average student. "Because it is so socially desirable, a willingness to say that the questioners were above average does not provide good evidence for an error in thinking. A willingness to say that the contestants were below average would have been good evidence of an error in thinking, but that result was not found" (Sabini et al 2001 p7).

3. Nisbett et al (1973).

Participants were told about individuals who

volunteered or not for a public-spirited task (and were paid for doing it). Then the participants had to rate the likelihood of these individuals volunteering for another such task (which was not paid). An individual's willingness to volunteer in the first case led to the assumption that they would volunteer in the second case. The FAE was to see individuals as having an altruistic character or not, and ignoring the money (situational factor) in the first case. Sabini et al (2001) challenged this interpretation: "But it seems just as correct to say of the results of this experiment that observer subjects attributed behaviour to the wrong internal cause (or disposition), namely altruism, when they should have attributed it to the right internal cause, namely the disposition to do things for money. The problem was not that subjects attributed internally when they should have attributed externally, because they could have made correct predictions if they had made the right internal attribution – to a desire for money" (p8).

A general problem with these experiments, for Sabini et al (2001), is that there is no right or wrong answer. The question of whether the behaviour is caused by internal or external factors is really a combination of both. Does a person eat a cake because they like cakes (internal) or because the cake is sweet (external)? The person eats the cake because they like the sweetness of the cake (ie: both factors).

Also there is the question what is an internal or external cause. For example, a drug addict needs a particular drug because of cravings (internal cause) or because their life is under the control of the drug (external cause) (Sabini et al 2001). Sabini et al (2001) urged the abandoning of the preoccupation with internal versus external causality (ie: either one or the other).

8.1. The Boy-Who-Cried-Wolf Effect

O'Sullivan (2003) applied the FAE to detecting deception in the "boy-who-cried-wolf effect". "When observers think positively about someone, believing him to be attractive, likeable, or interesting (ie: making positive dispositional attributions), they will also tend to believe he is telling the truth" (O'Sullivan 2003 p1318). The opposite is true for individuals viewed negatively and lying. Thus nobody believes them, and this is the reason for the use of the "boy-who-cried-wolf effect". It is based on the story by Aesop of the shepherd boy who kept falsely calling wolf and eventually nobody believed him.

O'Sullivan (2003) showed this effect in her first experiment using the opinion decision judgment task. This

involved ten one-minute videos of different men expressing opinions on controversial social issues, of which half were lying and half telling the truth. Fifty-five students at a California university in the USA were asked to rate each video as lying or truthful before scoring the men as attractive, trustworthy, likeable, friendly, and interesting on a six-point scale.

It was predicted that men rated positively telling the truth would be correctly spotted more often than those telling lies, and the opposite for men rated as low on attractiveness etc. There would be a positive correlation between rating of characteristics and identifying truth-telling, and a negative correlation between characteristics and identifying lying.

Overall, the accuracy of detecting truth or lies was 51% (just above chance - 50%) suggesting that individuals are not particularly good at detecting deception (table 3). Significant correlations were found as predicted. The participants were better at detecting truth-telling by men rated positively on the characteristics than detecting lying by these men, and the opposite for men rated as unattractive etc. But this was only because of the assumptions that attractive men were truthful and unattractive ones lying.

A second experiment with eight male and 26 female students found similar results. This time the task was to tell which of ten men were telling the truth about not stealing some money.

- Ignoring non-verbal cues of deception.
- Pay too much attention to what is said.
- Social perception bias (individuals are perceived as truthful or not and that perception remains).
- Use of cues to lying which are not accurate indicators (eg: belief that not making eye contact is sign of lying).
- Incorrect focus on deviations from the norm as signs of lying (eg: people who look different).
- Different cues to lying are needed in different situations.
- Individual differences in ability to detect deception (eg: emotional intelligence).
- No evolutionary advantage to detect deception.
- Individuals raised to tell the truth and assume that others are the same.
- Risk in social interactions of wrongly accusing another of lying ("accusatory reluctance").
- Wanting to believe another person (collusion and self-deception).

Table 3 - Different reasons as to why individuals are poor at detecting deception as summarised by O'Sullivan (2003).

8.2. Intergroup Attributions

The attribution process intersects with group membership in intergroup attribution, which is how individuals explain the behaviour of members of their own social group (ingroup) and members of other groups (outgroup). Pettigrew (1979) referred to an extension of the FAE in this case called the "ultimate attribution error" (UAE) [16]. This predicts that "(a) when people perceive what they regard as a negative act performed by an outgroup member, they are more likely to make attributions to dispositional factors in comparison to the same act carried out by an ingroup member, and (b) when people perceive what they regard as a positive act performed by an out-group member, they are more likely to make attributions to situational factors in comparison to the same act carried out by an in-group member" (Khan and Liu 2008 p16) (table 4).

The motivation to use the UAE is to enhance social identity and self-esteem. Saying that positive behaviour is a dispositional thing for ingroup members (eg: "we are good people") enhances social identity, and putting negative behaviour down to situational factors (eg: "circumstances made them do it") protects self-esteem (Khan and Liu 2008).

	INGROUP	OUTGROUP
POSITIVE BEHAVIOUR	Dispositional	Situational
NEGATIVE BEHAVIOUR	Situational	Dispositional
	Positive attribution bias - do no wrong	Negative attribution bias - do no right

Table 4 - Attribution of behaviour for ingroup and outgroup members.

Pettigrew (1979) listed the processes used to attribute positive behaviour by outgroup members and when (table 5):

- Exceptional case - eg: "the exception that proves the rule" or "not like other members of group".
- Luck - eg: "He's dumb like the rest of his group, but he won anyway out of sheer luck" (p468).
- Special advantage - eg: discrimination in their favour.

[16] Calling it ultimate was "some hyperbole", said Hewstone (1990).

- High motivation and effort make them an exceptional case, but without that they would be the same as the rest of the outgroup.

- Manipulated situational context - circumstances forced the outgroup member to perform positive behaviour.

	Exceptional case	Luck	High motivation	Situational context
Consequences of attribution important	X	X		
Short-term control of behaviour valued			X	X
Attributor lower status than actor	X	X		
Attributor higher status than actor			X	X
Generally behaviour regarded as dispositional	X		X	
Generally behaviour regarded as situational		X		X
Outgroup member separate from outgroup	X			
Value outcome from behaviour		X		
Behaviour regarded as difficult			X	
Situational role more important than group membership role				X

(Source: Pettigrew 1979)

Table 5 - Situations when different attributions about positive behaviour by outgroup members used.

The evidence to support the UAE has been limited. Of nineteen studies on it reviewed, Hewstone (1990) found only two that supported the positive attribution bias for ingroup members and the negative attribution bias for

outgroup members in relation to ethnicity [17] [18].

Hewstone (1990) outlined five methodological issues with the early research on UAE:

- Whether to use independent or related designs in the experiments.
- Statistical analysis.
- The need for a control group (neither ingroup or outgroup members).
- The use of forced choice measures - ie: either internal or external attribution.
- The use of hypothetical vignettes rather than real interactions.

Khan and Liu (2008) investigated the UAE with different ethnic/religious groups in India and Pakistan. In India, the majority of the population are Hindu and the minority Muslim, and the opposite in Pakistan.

The first study recruited 91 Hindu and 57 Muslim participants in Delhi, India. Using hypothetical scenarios, participants were asked to explain the behaviour. For example, a newly opened business by a Hindu or Muslim which succeeds or fails (table 6).

	Muslim positive behaviour	Muslim negative behaviour	Hindu positive behaviour	Hindu negative behaviour
Muslim	Ingroup - disposition */**	Ingroup - situation	Outgroup - situation	Outgroup - disposition **
Hindu	Outgroup - situation **	Outgroup - disposition **	Ingroup - disposition */**	Ingroup - situation **

(* support in India (study 1); ** support in Pakistan (study 2))

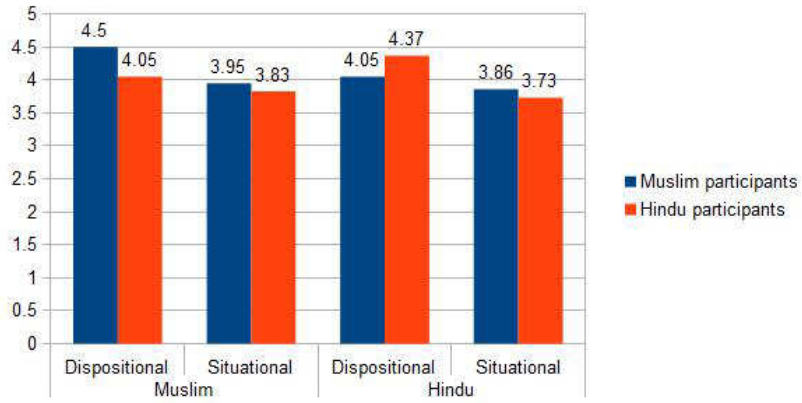
Table 6 - Different conditions in Khan and Liu's (2008) experiments and the predictions of the UAE.

The prediction that negative behaviour by outgroup

[17] For example, Taylor and Jaggi (1974) presented thirty Hindus in India with four scenarios of positive or negative behaviour by Hindu or Muslim individuals - eg: a passerby helping or ignoring a slightly injured person. The participants chose a reason for the behaviour from a list of five (usually one disposition and four situational). The passerby's positive behaviour by an ingroup member was attributed as dispositional by 67% of participants compared to 10% if a Muslim passerby. The figures were 3% and 33% respectively for the passerby's negative behaviour (Pettigrew 1979).

[18] Hewstone and Ward (1985), for example, did not find support with Malay (ethnic majority) and Chinese (ethnic minority) participants in Malaysia, nor Malay (ethnic minority) and Chinese (ethnic majority) participants in Singapore.

members would be attributed to dispositional factors more than negative behaviour by ingroup members was not support. But the prediction that positive behaviour by outgroup members would be attributed to situational factors more than positive behaviour by ingroup members was partly supported. Hindu participants attributed the positive behaviour of Muslims in the hypothetical scenarios to situational reasons more than for Hindus (but not significantly), while positive behaviour of Hindus was significantly rated as dispositional as compared to Muslims. Muslim participants attributed positive behaviour of Muslims to dispositional factors significantly more than to Hindus, but did not attribute positive behaviour of Hindus to situational factors more than Muslims (figure 3).

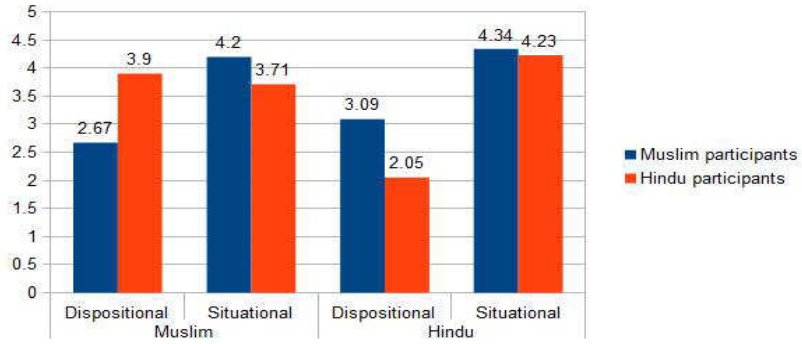


(Scale: 1 = not at all true - 7 = very true)

Figure 3 - Attributions of positive behaviour in the hypothetical scenarios in India.

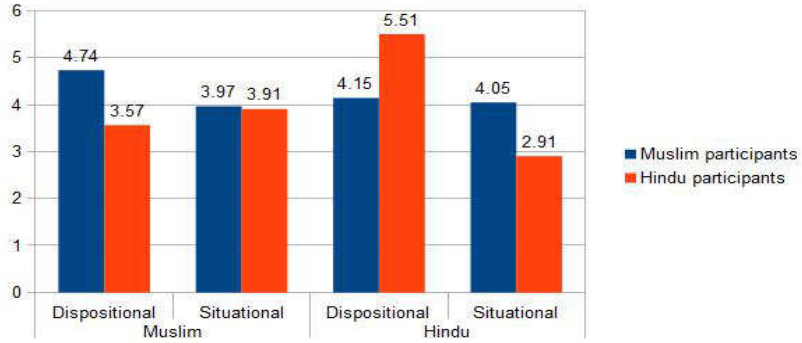
In their second study, Khan and Liu (2008) presented the same hypothetical scenarios to 107 Muslim and 38 Hindu participants in three cities in Pakistan. The results were slightly different to India. For negative behaviour, Muslim participants made dispositional attributions significantly more for Hindus than for Muslims, but (contrary to predictions) made significantly less situational attributions for negative behaviour by Muslims than by Hindus. The Hindu participants showed the predicted pattern of attribution for negative behaviours (figure 4).

For the attribution of positive behaviours, both groups of participants showed the predicted behaviour, except Muslim participants did not differ on their attribution of situational causes (figure 5).



(Scale: 1 = not at all true - 7 = very true)

Figure 4 - Attributions of negative behaviour in the hypothetical scenarios in Pakistan.



(Scale: 1 = not at all true - 7 = very true)

Figure 5 - Attributions of positive behaviour in the hypothetical scenarios in Pakistan.

Overall, the UAE received more support in both countries for attributions of positive behaviour (ie: dispositional for ingroup members and situational for outgroup members) than for negative behaviours.

Table 7 summarises the key limitations of the Khan and Liu (2008) studies.

- No control group (ie: hypothetical scenarios without Hindu or Muslim label).
- No baseline measure of attribution before group labels added.
- Compared only dispositional or situational attributions.
- Small samples.
- English speakers.
- Use of hypothetical scenarios.
- Only in particular areas of the countries.

Table 7 - Key limitations of Khan and Liu (2008).

1.9. ORGANISATIONS

Reason et al (2001) used the term "vulnerable system syndrome" (VSS) to describe organisations prone to accident or disaster. The researchers listed the core elements or "pathologies" of VSS.

1. Blame - The tendency to blame individuals for bad outcomes in an organisation, particularly "front line individuals". Such blaming is based in four attributional processes:

a) Fundamental attribution error - The emphasis on dispositional/personality factors over situational ones in explaining behaviour.

b) Illusion of free will - The belief, particularly in Western cultures, that individuals choose and control their behaviour and decisions.

c) Just world hypothesis - The assumption that individuals get what they deserve.

d) Hindsight bias - The tendency to see past events as more foreseeable that they are.

Reason et al (2001) added two other factors that reinforce blame. Firstly, the "principle of least effort" which focuses on an obvious mistake as the cause of the whole event and does not investigate the wider issues further. Secondly, the "principle of administrative convenience" which seeks the cause among those directly involved (ie: "front line individuals"), and again does not seek wider explanations (table 8).

Reason et al (2001) quoted a scenario from a hospital (based on a real-life incident in Carlisle et al 1996). A nurse incorrectly sets an automatic syringe pump giving morphine to a cancer patient, and it leads to a fatal overdose. By blaming the front line staff, the accident can be seen as the fault of the nurse and no one else. But wider organisational issues were also involved. For example, two similar syringe pumps were used, but they had different calibrations (ie: how much morphine to deliver per hour or per day). Previous confusions had been reported to management, but no warning was distributed to staff, nor pumps changed because of cost. Also the nurses were overworked on understaffed wards, which was accepted "as a sad fact of working life" by management. "The focus was solely on the individual nurses involved and the institution lived with the illusion that they had created safety by naming, blaming and retraining nursing staff who made errors" (Reason et al 2001 pii23).

Table 8 - Example of hospital and VSS.

2. Denial - The denial of the existence of a

systematic error that left the organisation vulnerable to the accident/negative outcome.

Westrum (1992) outlined three different types of organisation in terms of safety ("safety cultures"). "Generative" organisations encourage staff to make known safety concerns and issues to management, whereas "pathological" organisations are the complete opposite. "Bureaucratic" organisations are in the middle, and are the majority of organisations. "They will not necessarily shoot the messenger but new ideas often present problems. Safety management tends to be compartmentalised. Failures are isolated rather than generalised, and are treated by local fixes rather than by systemic reforms" (Reason et al 2001 pii24).

3. Wrong kind of excellence - The organisation is focused on the pursuit of certain indicators of success which are not necessarily relevant to avoiding accidents/disasters. "The corollary in healthcare institutions is a singular focus on critical numerical indices. Hospital managers live by numbers but they do not always appreciate their limitations. A myopic focus on manipulating specific indicators — such as waiting times/lists for clinics and surgery, number of operations carried out, percentage bed occupancy rates, frequency of cancelled procedures —does not readily lead to detection of the subtle interactions of the system that could end up as adverse events" (Reason et al 2001 pii24).

Reason et al (2001) suggested that vulnerable organisations, by having these three characteristics, "forget to be afraid or they never learn to be afraid" that dangers are always nearby because things happen. "If there is one set of characteristics that distinguishes the robust organisation from those more vulnerable, it would be a preoccupation with the possibility of failure, a conviction that today is going to be another bad day, and a shared awareness of all the many and varied ways in which Sod, Murphy, and human fallibility can combine to cause unintended harm" (Reason et al 2001 ppii24-25).

9.1. New Public Management (NPM)

The phenomena of vulnerable organisations goes with a wider development in organisational management called "new public management". Tolofari (2005) summarised the core characteristics as:

1. Marketisation - "The administration of public services was now benchmarked against private business – power should be exercised by those who give the service; the consumer should have choice; the reason to exist should be determined by how well the organisation

performs; there should be measures of performance and public accountability" (Tolofari 2005 p88).

2. Managerialism - "...business sector management style, wherein top public managers can exercise a great amount of discretionary power, exhibiting and using such tools as mission statements, development plans, labour contracts and performance agreements" (Tolofari 2005 p83).

3. Measurement.

These characteristics were a summary of seven "doctrines" (Hood 1991):

i) "Hands-on professional management" - named individuals at the top of the organisation who are "free to manage".

ii) "Explicit standards and measures of performance" - quantitative measurable goals, targets, and indicators of success.

iii) Focus on "output controls" - ie: results (rather than procedures).

iv) "Disaggregation of units" - eg: breakdown of large departments into management teams or contracts.

v) Competition in the public sector - eg: via tendering of contracts.

vi) "Stress on private-sector styles of management practice" - eg: use of PR techniques.

vii) "Discipline" in resource use - this is seen in "just-in-time" inventory control systems (ie: not keeping large stocks), payment-by-results reward systems (ie: not paying for what is not delivered), and administrative "cost engineering" (spending no more than minimum for defined task).

NPM developed in the UK since the mid-1970s, and is associated with four other "megatrends" in public/state administration (Hood 1991):

- Attempts to reduce the number of public sector employees.
- The privatisation or quasi-privatisation of government services.
- The development of automation and information technology (IT).
- A more global perspective to public administration.

Hood (1991) also described NPM as the "marriage of opposites" - "new institutional economics" and "business-type managerialism". The former includes the ideas of user (consumer) choice, competition, and transparency, while the latter emphasised "professional managerial expertise as portable". Thus the skills of managing a private-sector company can be moved to running a public-sector organisation, and such skills are more important than technical expertise in a particular area.

Hood (1991) added other factors that aided the rise of NPM including a "tax-conscious" electorate who want more personal income, the removal of traditional barriers between "public-sector work" and "private-sector work", and government policy based on opinion polls.

10. APPENDIX A - AMBIVALENCE ABOUT DYING

Ohnsorge et al (2012) noted that: "(F)requently, patients at the end of their lives express seemingly contradictory feelings, expectations or preferences with regard to their illness and their death. Palliative care professionals and families often find themselves confronted with patients who on one day hold something as important, while the next proclaim to be in favour of its opposite" (p629). How to deal with such ambivalent or contradictory behaviour?

The researchers explored this ambivalence towards dying in semi-structured interviews with terminally ill patients, their families and caregivers in a hospice and a hospital in Switzerland. The statements about dying were found to be embedded in the patients' framework of meaning and their sense of identity. Thus "the experience of multi-layered, seemingly contradictory meanings can be intrinsically part of personal moral experience, as it can characterise the process of negotiating personal meanings. What often seems to others illogical, contradictory or at least difficult to understand, might be triggered by the interaction between different stories told by the same person about what she or he equally cares for" (Ohnsorge et al 2012 p637).

Ohnsorge et al (2012) argued that the contradictions are ambivalence rather than "a sign of inconsistency or confusion". Ambivalence is common in "everyday storytelling", and tends to be ignored or seen as a sign of personal conflict. But life is complex in meaning and individuals make sense of it in different ways. Ohnsorge et al (2012) concluded: "we should be careful not to negatively label or even pathologise seemingly contradictory patient behaviour or statements" (p639).

11. APPENDIX B - MARSH ET AL (2003)

Marsh et al (2003) performed three experiments on the integration of information from fictional stories into an individual's worldview.

In the first experiment, 24 undergraduates at Washington University, USA, read nine short fictional stories, each containing eight facts [19], before completing a 164-item general knowledge quiz. Half of the questions were related to the facts in the stories. Participants were also asked whether their answer to each general knowledge question came from the stories or not (source information). Participants were quite good at recalling the source of information for correct answers. Also they had integrated the information from the stories into their general knowledge as they "often claimed that they had known this information before the experiment". This experiment showed that factual information from fictional stories is integrated into a view of the world [20].

The second experiment tested whether misinformation in fictional stories is also integrated into general knowledge, using a similar design to the previous experiment and 36 more students.

Having read misinformation, some participants had a reduced ability to answer general knowledge questions correctly, and were not aware of the source of the misinformation as "they also believed that had known these wrong answers prior to the experiment".

Experiment 3 investigated recall after a delay of one week using another 48 undergraduates. The effect of a delay was to dilute the recall of information from the stories. "Misinformation responses, however, were still misattributed to prior knowledge..." (Marsh et al 2003).

Overall, the experiments showed that participants used information from fictional stories to aid them in answering general knowledge questions, including when they had read misinformation. Participants were aware of the source of the information in some cases, but they also misattributed it (ie: believed it was prior knowledge).

Marsh et al (2003) explained the findings with the "hybrid representation hypothesis". The information in the story was integrated into general knowledge [21], which

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[19] Eg: One character in the story says: "This here, this is a sextant and it's the main tool used at sea to navigate via the stars".

[20] The average correct general knowledge answers were 42% where not read the answer compared to 53% where read it.

[21] "People learn information about the world from a multitude of sources: other people, newspapers, textbooks, classes, museums, and so on. While encyclopaedias, non-fiction books, documentaries, and other such sources are designed to teach, learning may also result from exposure to non-educational

led to an "illusion of prior knowledge" or "knew-it-all-along effect" (Wood 1978). The latter is where individuals told the correct answer believed that they had known it already.

12. APPENDIX C - ECKER ET AL (2011)

Ecker et al (2011) performed three experiments on emotionality, retraction and misinformation.

Experiment 1

Seventy psychology undergraduates in Australia were randomly allocated to one of seven conditions (table 9). All of them read a fictitious news report of a plane crash between Sydney and Brisbane, which killed over 100 passengers.

The first independent variable and variation in the reading material was the level of emotionality - either bad weather (low) or terrorism (high emotionality) was given as the initial cause of the crash. The second independent variable related to the retraction of the initial cause, and had three versions - no retraction, simple retraction, or causal-alternative retraction (where a faulty fuel tank was given as the cause). The control group was given the explanation of fuel tank fault and no retraction.

	Low emotionality	High emotionality
No retraction	1	4
Simple retraction	2	5
Causal-alternative retraction	3	6

Control 7

Table 9 - Seven conditions in Experiment 1.

sources that happen to contain information about the world. Fictional sources such as television sitcoms, movies, novels, short stories, and even comic strips often occur in familiar political, geographical, and historical contexts. As such, fiction is potentially a source of information about the world" (Marsh et al 2003 p519).

Five minutes after reading the material, the participants were given a memory test. The researchers were interested in the reference to the misinformation in the participants' recall. The mean score for recall of misinformation was 5.60 (out of 9) in the no-retraction groups (conditions 1 and 4 in table 9), 6.60 in the simple-retraction groups (conditions 2 and 5 in table 9), and 0.90 in the causal-alternative retraction groups (conditions 3 and 6 in table 9). This last mean was significantly lower than the other two ($p<0.001$). The results showed that a simple retraction of misinformation had little effect whereas providing an alternative explanation led to less recall of the misinformation.

Ecker et al (2011) observed: "it is important to note that no study has yet convincingly demonstrated a complete annulment of the influence of initial misinformation, even if the corrections were clear, memorable, immediately followed the initial misinformation, and supplied causal alternatives" (p302).

Interestingly, for the researchers, the level of emotionality had no effect on the continued influence of misinformation or not.

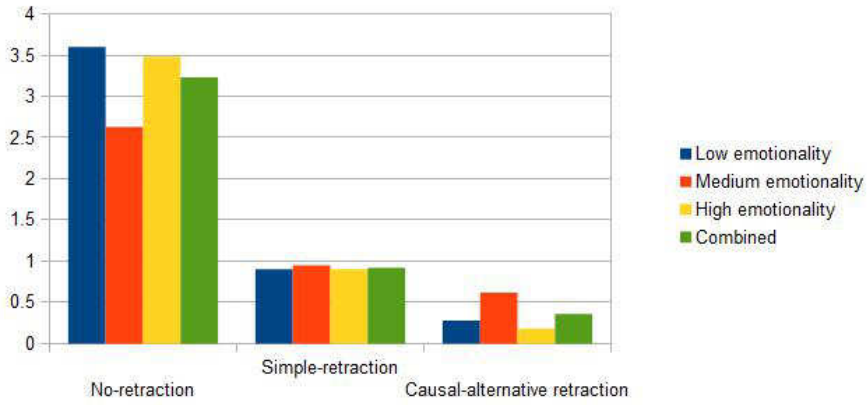
Experiment 2

This was similar to Experiment 1 and involved 112 more psychology students. There was a forty-minute interval between reading the material and the memory test. Again the causal-alternative retraction groups recalled significantly less misinformation (mean: 0.77 out of 24) than the no-retraction groups (mean: 2.73), but this time so did the simple-retraction groups (mean: 0.86). Ecker et al were unsure why the findings about the simple-retraction groups differed in Experiment 2 to Experiment 1.

Experiment 3

This experiment added a third level of emotionality with 200 more psychology students. In the low emotionality conditions, bad weather was given as the initial cause of the plane crash but no passengers died, while in the medium emotionality conditions, there were over 100 deaths. In the high emotionality conditions, there were over 100 deaths from a terrorist bomb on the plane. The retention interval was 20 minutes.

Again the level of emotionality had no effect on recall of misinformation, and the findings were similar to Experiment 2 (figure 6).



(Data from Ecker et al 2011 table 6 p296)

Figure 6 - Mean number (out of 24) of references to misinformation in Experiment 3.

13. APPENDIX D - THRIFT CHIC

Jensen (2012) outlined the discourses around "austerity" as used in the UK since 2008-9. The restrictions on Government spending associated with it "have been mediated through a range of metaphors, specifically around the 'solvent family', the hardworking family, and above all the responsible family which lives within its means and saves in order to spend, rather than borrows in order to spend" (p2). This has been taken up by some parents in a "turn to austerity" [22] in popular culture with "how to do more with less" self-help books and blogs. In return for this good behaviour now is the promise of future happiness. Jensen (2012) also noted that this "new thrift culture" [23] is gendered as the "happy housewife" [24] or "good mother".

Austerity and self-discipline are valued in the context of the opposite - the morally undesirable fecklessness of the "underclass" or "undeserving poor"

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[22] "Far from being a means to survival, thrift is here being promoted as a lifestyle, reinvigorated as a source of cultural value and a site of distinction. The contemporary cultural expression of thrift is... disconnected from working-class life, necessity and pleasure and is instead connected to middle-class romances of retreat" (Jensen 2012 p12).

[23] Jensen (2012) commented on "austerity chic" as seen in television programmes like "Superscrimpers" (Channel 4 Television; UK), and the romanticism of the past: "As such the 'new thrift' seeks to position itself as a philosophy that is at odds with the contemporary world and which harks back to the wisdom of the past" (p16).

[24] "In the happiness paradigm, it is not the social, economic and material costs of motherhood (the motherhood penalty, patchy and unaffordable childcare, incompatibilities between unpaid care and paid labour..., shrinking welfare benefits for lone parents, a lack of well-paid flexible work and so on) which create maternal unhappiness, but the failure of mothers to fully and selflessly embrace, and willingly retreat, into happy housewifery" (Jensen 2012 pp18-19).

who "choose" to remain at the bottom of society, and "enjoy" their dependence on the State. Their behaviour is, thus, "not a result of global recession or of diminishing job opportunities, but rather is a direct result of a munificent welfare system which has 'gone soft' and allows the unemployed to languish with no real pressures to find work" (Jensen 2012 p5).

This "rhetoric of dependency", as Jensen (2012) called it, "situates poverty as only ever a condition of worklessness, and worklessness as only ever individual failure" (p5) [25]. Furthermore: "One of the most grotesque narratives that has emerged from the current financial crisis is that the crisis has been caused not by high-risk speculative capitalism, but by those who subsist upon the public purse: not just the unemployed but also the lone parent, the disabled, and the sick" (Jensen 2012 p6) [26].

The shift of "blame" for the current economic problems is thus moved from economic to social in the form of the "Broken Britain" discourses. Jensen (2012) observed:

> The myths of 'Broken Britain' ignore the politics of unemployment: the global impacts of neo-liberal policy, regional de-industrialisation, global migrations of capital, tax evasion and consolidation of wealth by a new class of super-elites, the wilful destruction of organised labour, and new topographies of work which normalise insecurity. 'Broken Britain' rhetoric ignores the intensified precarity of all labour – the rise of short-term contracts or contractless work, underemployment, low wages, the threat of outsourcing, diminishing returns on maternity pay and sickness pay, the failure to recognise caring responsibilities, 'flexploitation', the shift of education and training costs and risks to the individual and so on... By locating blame for unemployment in a 'generous' welfare state, these myths fail to recognise how important the welfare state has become in supplementing low paid and precarious work (p7) [27].

The move of focus for the problems in society to social issues and individual responsibility is seen in the idea of "good parenting" as the means to overcome

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[25] However, 61% of British children officially defined as "in poverty" had at least one parent in work (Joseph Rowntree Foundation 2011 quoted in Jensen 2012).

[26] Garthwaite (2011) pointed out that the "integrity of the sick is constantly being called into question, as shown by the types of remark made by UK Chancellor George Osborne suggesting that welfare is a 'lifestyle choice' (an insight that perhaps only a multi-millionaire like him could have)" (p371).

[27] Bambra and Smith (2010) summarised the changes as "a gradual transition from a Fordist welfare capitalism, in which the welfare state and social security were characterised by centralism and universal, passive, and unconditional benefits, to a post-Fordist 'workfare' capitalism in which welfare provision is pluralist and benefits are targeted, active and conditional...".

social failings. The success or failure of a child in any aspect of their lives including getting into university or finding a job are placed foremost at "good parenting". This idea turned around as "bad parenting" can be aimed at working-class parents who fail in this area. "The 'good parent' that is referenced in these debates is silently but resolutely middle-class – privileged and resourced – but these (classed, material) advantages are obscured in policy which speaks of 'good parenting' as a matter of culture and aspiration. 'Good parenting' thus forms a key pillar in fantasies of meritocracy... even in the face of powerful sociological evidence which documents the impact of economic and material (classed) constraints on family practices..." (Jensen 2012 p8).

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