THE SCIENCE OF COMPLIANCE

Abstract – Practitioners in many businesses and consumer environments understand and utilise six universal principles of persuasion to successfully influence their target audiences.
How can these scientifically validated principles of persuasion be applied equally effectively in medicine and healthcare in the pursuit of increasing patient compliance?

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If only Mary Poppins was right and all it took was a *"spoonful of sugar"* to help the medicine go down. More likely that the medicine prescribed will, quite often, not even find its way out of the bottle or blister pack in which it is contained.

Why is it that people will routinely forget or sometimes even decide not to take a medicine that they have been prescribed? Why, when there are obvious and clear benefits to a healthy lifestyle, will individuals ignore the advice of their Doctor or Healthcare Professional regarding their diet and exercise habits? And, just as vexingly, how can it be that sometimes as many as 25% of people will even fail to attend an appointment that they have made with their Doctor to receive needed advice or treatment?

Wouldn't it be marvellous if people were like computers, able to absorb all of the relevant health information they receive, rationally process it and arrive at informed decisions about how to behave in the best interests of their health? However, as many people in the healthcare industry will attest, people are anything but computers. They will often disregard very important health information and communications. They will fail to comply with their Doctors' recommendations and in doing so behave in ways that could have a devastating impact on their health and well-being.

The cost of non-compliance

The cost of such non-compliance is in many ways very difficult to estimate. Nonetheless, the Medicines Partnership[i] is a government backed professional body whose statistics on non-compliance make alarming reading.

- In 2002 444,000[ii] prescriptions were written each day and given out by General Practitioners in the UK. As many as 1 in 5 of those prescriptions don't even reach the pharmacy in order to be dispensed It is estimated that at anyone one time up to 70% of the United Kingdom population is taking either a Prescription Only or Over the Counter Medicine.
- In 2001 over £230million worth of prescribed medicines were returned unused to UK pharmacies[iii] – provoking another question. What is the net worth of medicines that are not consumed and are not returned to pharmacies?

- It is estimated that 31% - 45% of patients on long term medication will fail to collect a repeat prescription within the first year of treatment[iv]
- Non-compliance is not limited to specific medical conditions and ranges in incidence from 30% for arthritis treatments to an amazing 90% in the case of contraception[v]
- The impact of medical non-compliance is not even limited to the taking of medicines. Often it can manifest itself other ways such as;
  - failing to attend appointments – sometimes labelled the dreaded "D.N.S's" (Do Not Shows)
  - failing to accept and carry out medical recommendations that clearly have a beneficial impact on an individuals' general health and well-being e.g. smoking cessation, regular exercise and intake of a well balanced diet.

There can be no question that non-compliance to a medical treatment or a piece of healthcare advice can result in some very undesirable outcomes. Whilst the most obvious is the deterioration in an individual's health there is impact elsewhere too. The cost to the National Health Service and the UK tax payer of non-compliance is huge and the lost income to healthcare and pharmaceutical suppliers is certainly not insubstantial, not to mention the potential loss in faith of the medical profession and our medicines just because someone didn't "feel better" within a few hours of taking the first dose.

So why is it that some recommendations aimed at increasing better health outcomes succeed while others fail? Why do some healthcare professionals enjoy higher patient compliance rates while others watch as their patients continue a disturbing trend of non-compliance?

Health professionals and the wider healthcare community consistently deliver large amounts of information to patients and their families. Information about the benefits of using hormone therapy, a physiotherapist's recommendations to her patients about how best to care for their injuries, a doctor's instructions to his patients regarding how to get the maximum benefit from a new medication may all be extremely useful pieces of information for people making decisions about their health. Why then will people often disregard these very important health communications? Why do they fail to comply with

their doctors' recommendations and, as a result, expose themselves to behaving in obviously health damaging ways.

How do individuals decide what to do?

When people have both the ability and the motivation, they often think deeply about health-related communications and subsequently weigh all the information to come to an informed decision about how best to behave. However, most people are bombarded daily by information about issues like whether or not a new diet really works, about how much exercise people need to stay fit and about the differences between good cholesterol and bad cholesterol. Not only is there an overwhelming amount of information, the sources of information are also increasing in number and include, but are certainly not limited to, a healthcare professional's advice, patient information leaflets, TV and Radio advertising, the Internet, family and friends. There is simply too much information for people to register it all. As a result, people use cognitive shortcuts or rules of thumb to help them decide what to make of a communication and, in turn, whether to comply with the recommended action[vi]. Understanding these cognitive shortcuts can provide tools to enhance the persuasiveness of messages ultimately aimed at increasing compliance to the benefit of an individuals' health.

These cognitive shortcuts fall naturally into six categories that describe commonly used principles of social influence[vii] (See Table 1; Cialdini, 2001). The business and consumer professionals seem intuitively to know and understand these principles of social influence and use them very effectively in getting their customers to buy new cars, use a particular brand of washing powder or donate to a worthwhile charitable cause.

Might there be ways to utilise these principles of social influence to improve the communication of health information so that people would be more likely to behave in ways that protect their health? Social scientific research strongly suggests that the answer to this question is a resounding 'yes'. This research has identified many of the key factors that can help healthcare professionals enhance their attempts at effecting positive behaviour change and as a result increase the likelihood that a individual will comply with a course of medical treatment, persevere with their diet or any other appropriate recommendation..

PRINCIPLES OF SOCIAL INFLUENCE[viii]

(table 1.0)

Principle	Description
Scarcity	People typically overvalue things that are rare, dwindling in availability or difficult to acquire
Authority	People are more easily persuaded by individuals perceived to be legitimate authorities
Social Proof	People often look to the behaviour of similar others for direction about what choices to make
Liking	People prefer to say “yes” to those they like
Reciprocity	People feel obligated to repay, in kind, what has been given to them
Consistency	People feel strong pressure to be consistent within their own words and actions

Scarcity

The principle of Scarcity suggests that *people typically associate greater value with things that are rare, dwindling in availability, or difficult to acquire*. There are many examples outside of the immediate healthcare environment that we are aware of to support this claim. In recent years many parents have gone to great lengths to purchase the most popular Christmas toy that happens to be out of stock in all the stores. In the UK, the petrol shortage in the summer of 2000 resulted in some extraordinary behaviour as people scrambled to acquire the fuel that was so limited in it’s availability. Even as recently as October 2003 the notion of losing something caused many thousands of people to stop their cars and block a major motorway just to see the final take-off of the Concorde, a sight, we would point out, that had been a familiar one every single day for the last 30 or so years. So most of us are familiar with the concept of our likelihood to be persuaded more by what we stand to lose than what we stand to gain, but can this principle be applied in the medical environment to increase the level of compliance to medical advice and treatment? Well according to social psychologists Beth Meyerowitz

and Shelly Chaiken the idea of presenting what a patient stands to lose when delivering a healthcare recommendation is especially effective[ix]. When distributing information leaflets asking women to perform breast self-examination on a regular basis they found that those who had received a leaflet that contained **positive** messages about the benefit of conducting self-examination, *e.g. women who perform this examination have an increased chance of finding a tumour at a treatable stage,* were no more likely to perform the examination than those that were just given instructions on how to conduct the self-examination. Contrast that with the third group though. This group were provided with instructions for carrying out self-examination along with information that informed them of the **negative** consequences of failing to do so *(i.e women who fail to perform the examination have a decreased chance of finding a tumour at a treatable stage)*. Four months after being given this negatively framed information; Meyerowitz and Chaiken found this group were significantly more likely to carry on performing the breast self-examination. How you present information can often make a significant difference in a real life and death situation. Prompting the use of the mental shortcut of scarcity can motivate positive health behaviour change (Redelmeier & Cialdini, 2002)[x].

Authority

A nurse at the local hospital is becoming frustrated with the lack of compliance she has been receiving from her patients. After an early morning appointment with a man being treated for heart problems, she finds that patients seem particularly attentive to her suggestions and more willing than usual to follow her orders. It is not until her afternoon break that she realises that she forgot to take off her stethoscope from her first appointment. What might be the connection between her stethoscope and the increased compliance observed in her patients? Social psychological research indicates that *people are more easily persuaded by individuals perceived to be legitimate authorities*. Doctors, for example, are afforded substantial authoritative power in our society. Because we tend to view authorities as credible sources of information, they are particularly effective as agents of behaviour change. Indeed, research suggests that nurses who wear stethoscopes, an emblem symbolising a physician's expertise, are viewed as more authoritative than those who do not (Castledine, 1996)[xi].

To maximise patient compliance, it is crucial that health professionals make the most of their authority. For example, whenever possible doctors should directly communicate instructions to their patients, rather than passing them indirectly through people who may be viewed as less credible in the eyes of the patient (e.g. a nurse, receptionist, practice manager, etc.). Because this may not always be possible, doctors can emphasise to their patients, the training and expertise of their colleagues so that they are also viewed as credible sources of information. In turn, these healthcare professionals can increase their credibility by prominently displaying their professional training, awards, and certifications (Redelmeier & Cialdini, 2002)[xii].

Social proof

Suppose that this year you decide that you will take some more exercise and try to lose a few extra pounds. How do you choose the best way to achieve your goal? Do you join your local gym, take up cycling each morning to work, or perhaps take part in that new diet that you've heard your friends at work talk about? Most likely, you'll look outside of yourself, and to others around you for at least part of the answer. The principle of social proof says that when we are uncertain and we are attempting to make the right decisions about our health, *we will often look to the behaviour of others around us for direction about what choices to make*. This is compounded when those around us are similar to us in terms of age, education, social standing and experience.

Social psychologists refer to what people commonly do in a given situation as a *descriptive norm*. Descriptive norms typically provide people with useful information about which courses of action to take – if you find that a weekly yoga class is generally popular, the chances are that attending the yoga class would not be a bad choice. Looking to see what other people are doing is a quick and easy tool for making decisions in uncertain circumstances (Festinger, 1954)[xiii]. Indeed, social proof has the greatest persuasive power when the 'right' choice in a given situation is somewhat ambiguous (Clark & Word, 1972)[xiv]. For example, anxious people awaiting an anxiety-provoking medical procedure prefer to share a room with someone who have already undergone the procedure (Kulik & Mahler, 1989)[xv], because such a person can provide useful information about what to expect (Kulik, Mahler & Earnest, 1994)[xvi].

Health communicators can also set their own descriptive norms by informing people that a particular behaviour is normative. For example, a doctor's declaration that most of his patients tend to choose the recommended activity over another option (e.g. "Most of my patients opt for surgery over radiation therapy; c.f. Crawford et al., 1997)[xvii] is likely to prove particularly persuasive. Evidence also suggests that people tend to seek information especially from those who are similar to them (Miller & Zimbardo, 1997)[xviii]. Health professionals can use this knowledge to their advantage. For example, they might communicate that a particular course of action is increasing among a certain group of people e.g."*More and more people your age are starting to take walks on their lunch breaks to squeeze in some exercise during the day*".

When highlighting descriptive norms, however, it is important that the healthcare professional does not use the principles of social proof to reinforce an unwanted behaviour. An interesting study[xix] on road safety could provide us a sobering lesson to the challenge of patients who fail to show up for appointments they have made with their doctors. Many of us are familiar with the road signs that alert drivers to the number of other drivers who have been caught travelling in excess of the legal speed limit on this road. What is fascinating is that a sign declaring, *"347 drivers were caught speeding on this road last month"* can have the effect of ***increasing*** the number of speeding drivers in subsequent months. Why would this be so? Well drivers could be forgiven for thinking that *"lots of other people in a similar position to me are speeding so it must be OK".* An example of the social proof principle having the equivalent of a 'psychological backfire'.

A familiar sight in Surgeries and Health Centres up and down the country is the poster on the waiting room wall stating that "34 people failed to turn up for their appointment last month." The road safety study would suggest that it is, therefore, not surprising that the poster has little effect decreasing the number of no-shows. Better to use power of social proof to reinforce the change one desires by pointing out that "over 95% of patients who are unable to make their appointment with the doctor telephone the surgery the day before to inform us."

Liking

Put simply, the principle of liking says that *people prefer to say "yes" to and comply with the requests of those they like.*

So what characteristics influence people's liking for others? Social scientists point towards three specific amplifiers of liking: Similarity, Praise and Co-Operation. We'll take them in turn.

Firstly, people tend to like others who are similar to them (e.g. Suls, Martin & Wheeler, 2000)[xx]. For example, a dietician wishing to persuade patients to change their dietary intake and habits might point out certain areas of similarity she shares with her audience (e.g. like them, she was once not in the best physical shape; but, like them, she wanted a healthy, well-rounded lifestyle).

Secondly, people will tend to like those, and therefore be more persuaded by those, who pay them compliments and give them praise (Byrne, Rasche & Kelley, 1974)[xxi]. There is strong evidence to suggest that people are extremely receptive to the requests of others immediately after they have received a compliment. A doctor or healthcare professional who wishes patients to continue to remain compliant and to take their tablets regularly would do well to first compliment them on the progress they have made so far before making the request that "they continue taking their medicine three times a day after meals".

Thirdly, we like people who co-operate with us towards mutual goals. (Cialdini, 2001)[xxii]. As this evidence would suggest, working with patients, understanding their treatment goals and working together to make a jointly owned plan of care will enhance co-operation so that when a suggestion is made by the doctor or healthcare professional then it is done in the context of working together.

Reciprocity

Imagine that one day while walking along the street, a volunteer from the National Blood Service approaches and asks if you would be willing to participate in a long-term blood donor initiative by donating a unit of blood every 60 days for the next three years. Thinking of the time this would require (and of the pile of work waiting for you on your desk) you tell the volunteer that, no, you don't think you can make such a commitment. The volunteer responds, "I understand. In that case, would you be willing to help us with a one-time donation sometime this week?" With some hesitation you say "okay," and agree to this more reasonable request.

Cialdini & Ascani (1976)[xxiii] presented this very scenario in a scientifically controlled experiment, and what they found was quite interesting: Those people who declined to participate in the long-term donor initiative (as nearly all did) subsequently agreed to the one-time donation substantially more often than people who were simply asked to offer a one-time donation straightaway (49.2% vs. 31.7%). This study exemplifies our 5th principle of persuasion, the principle we call reciprocity. The principle of reciprocity states that *people feel obligated to repay, in kind, what has been given to them*. In this case, the volunteer granted the potential donor a concession – retreating from the larger request to the smaller request. In turn, donors felt obligated to repay the volunteer with a *reciprocal concession*, agreeing to the smaller one-time donation. The power of reciprocity isfar reaching– not only did those people who reciprocated agree to the smaller donation more often than those who were only presented with the smaller request, when those people arrived at the blood donation centre they were also more likely to volunteer for future donations (Cialdini & Ascani, 1976)[xxiv].

In another version of the reciprocal concessions technique, a doctor might advise patients to engage in the most beneficial (likely also to be the most difficult) regime appropriate for their medical condition (Sensenig & Cialdini, 1984)[xxv]. If the doctor finds that her patients fail to comply with the recommended plan, she might then suggest, as a concession, a somewhat easier regime. In using this approach, there is the chance for two kinds of successes: Some patients will comply with the most beneficial regimen,

which is to everyone's advantage; but, those who don't should be more likely to comply with the more moderate (but still effective plan) than if the doctor had suggested only it. The principle of reciprocity does not only apply to concessions - it applies equally to the exchange of other types of resources as well. For example, in persuading her newly diagnosed diabetic patients to adhere to a special diet, a nutritionist might provide them with the newest relevant information or even provide them with free referrals to other valuable support classes. There are two caveats to the principle of reciprocity – firstly for it to be effective, people must be able to view the gift or favour given as valuable to them personally; if they see it simply as an attempt to persuade them, the strategy can backfire. Secondly, the gift must be seen as a gift and not as a reward for a particular behaviour. The principle of reciprocity is clear. When seeking compliance from a patient, it is important that the healthcare professional is the first to give. Information, advice, compliments and attention will all serve to make subsequent requests you make more likely to be actioned and adhered to (Church 1993, and Warriner, Goyder, Gjertson, Horner & McSpurren 1996)[xxvi].

Consistency

A ubiquitous part of human nature is that people strive to feel good about themselves. People generally behave in ways that help them maintain or enhance their self-esteem. This includes behaving in accordance with one's important values and beliefs – when our behaviour is consistent with who we are and what we value, it makes us feel good (Sheldon & Elliot, 1999)[xxvii].

Imagine that you are a medical receptionist. A patient has just seen her doctor and is waiting to book a follow-up appointment. Should you fill out the patient's reminder card or organise the generation of a computerised appointment letter? Or might it be better to give the patient a blank appointment card and a pen and ask the patient fill out the card herself? Our principles of social scientific research suggests the reason why the latter procedure should be used: *People feel strong pressure to be consistent within their own words and actions* (Baumeister, Stillwell & Heatherton, 1994, Festinger, 1957)[xxviii]. Making a commitment ties a person's sense of self to a particular course of action. Asking the patient to fill out her own form establishes a basis for consistency – failing to return for

her scheduled appointment would be inconsistent with her earlier commitment (c.f. Sensenig & Cialdini, 1984)[xxix].

There are several conditions in which consistency tends to have maximum impact and adherence to be compliant. First, the person's commitment should contain an *effortful action* (Bem, 1967, Aronson & Mills, 1959)[xxx]. Indeed, in the aforementioned example, having the patient fill out the card herself, rather than simply handing one to her, should enhance her sense of commitment. And in general, the greater the effort - the greater the resulting sense of commitment will be. Second, the commitment should be made public (Deutsch & Gerard, 1955)[xxxi]. Watching the patient fill out her reminder card should increase the probability of her return, whereas simply handing her the card and allowing her to fill it out by herself in the waiting room or outside in her car would likely be much less effective. Indeed, one of the linchpins of the consistency principle is that people don't like to *appear* inconsistent to others. Third, the commitment should be (or at least appear to be) freely chosen and owned (Freedman, 1965)[xxxii]. Commanding the patient to fill out her own card would not be nearly as effective (since the commitment would not be internally motivated). The more effective receptionist would merely and politely suggest to the patient that she write her own reminder, giving her the sense that her action was freely chosen.

Another useful example is the case of a physiotherapist asking her patients to write a contract listing their recovery goals. This contract would then serve as a public expression of each patient's commitment. In the same vein, smokers wishing to rid themselves of their habit would be well-advised to make public their commitment to quitting, for example, by voicing their resolution to close friends and family (Cialdini, 2001)[xxxiii] and then writing down their smoking cessation targets actions and dates. This public, active, effortful and owned declaration would likely increase the probability of the quitter's success.

Conclusion

We have sought to provide not only interesting and scientifically validated evidence of how healthcare professionals can increase the likelihood of an individual complying with their recommendations and prescribed treatments but also some practical applications for the use of these principles. (See table Martin & Cialdini 2004)[xxxiv]

There are some additional points we would like to make regarding the use of the principles we have described. Firstly, although these principles are conceptually distinct, the communications are likely to be most effective at fostering compliance and concordance when using several of these principles at once. For example, consider a doctor who is prescribing a medicine to a newly diagnosed diabetic patient. The doctor could point out how a number of her other diabetic patients, who happen to be of a similar age and in similar circumstances, have achieved good blood glucose control by taking the medicine twice daily and keeping a diet diary. The doctor may then go on to compliment the patient on his or her past with medical treatments. By doing this, the doctor creates a powerful communication to the patient that, in this example, utilises three of the social influence principles we have presented namely, Social Proof, Consistency and Liking.

Second, it should be clear that although people use these mental shortcuts when making decisions, this is not to say that people *consciously* use them. It is not the case, for example, that someone will often say to himself, "Well, I've got this far in my course of medicine. My sense of commitment dictates that I continue!" Nonetheless, whether or not the operation of the principles of persuasion is consciously recognized, the existing evidence indicates that they will be influential.

Thirdly, it is important to realise that the reason people use these shortcuts is because, on average and in most circumstances, they tend to appropriately steer people in the right direction. That is, it is not the case that people are being stupid or making mistakes when they use these mental heuristics to guide their choices. They are often merely overwhelmed with information and know subconsciously that these shortcuts have served them well in the past.

Fourthly, because much health information is highly relevant to their goals, people may consequently be motivated (although not always able) to deeply process the content of these messages. Indeed, the effectiveness of a message will depend upon a combination of the substance of the message and the way that message is delivered. Thus, the principles we have discussed are not an alternative to providing people with substantive health information but more a vehicle for ensuring those important messages are communicated in an impactful and persuasive way that makes compliance most likely.

Our final point concerns influencing the influencers themselves. Clearly the healthcare professional needs support to utilise effectively the vast body of social psychological research on which this report is based. Appropriate education and training will provide those healthcare professionals with the ability to improve compliance and concordance rates with a robust and scientifically validated set of tools. The relative cost-effectiveness of training and education of this kind is a very attractive proposition when one considers the obvious improved health outcomes to the patient, the huge savings to be made to the Health Service and the increased profitability to the healthcare and pharmaceutical providers.

THE PRINCIPLES OF SOCIAL INFLUENCE AND THEIR APPLICATION IN IMPROVING PATIENT COMPLIANCE (Table 2.0)

Principle	Definition	Application
Scarcity	People typically overvalue things that are rare, dwindling in availability or difficult to acquire	Highlight what could be lost or potentially lost if an individual fails to take appropriate health protective behaviour or act on the advice of the healthcare professional
Authority	People are more easily persuaded by individuals perceived to be legitimate authorities	Make visible the credentials of those who deliver health care advice including displaying certificates, diplomas and training
Social Proof	People often look to the behaviour of similar others for direction about what choices to make	Point out how other patients in similar circumstances have achieved favourable health outcomes by following the advised course of treatment or action
Liking	People prefer to say "yes" to those they like	Point out areas of similarity and give genuine compliments to patients. Demonstrate the healthcare professionals desire to work with the patient and co-operate with the advised course of treatment
Reciprocity	People feel obligated to repay, in kind, what has been given to them	Use concessions to engage the patient in behaviour changes that are recommended. Give attention, compliments, advice and information first. Use gifts and not rewards as a motivator of future compliance
Consistency	People feel strong pressure to be consistent within their own words and actions	Have people make active, public commitments to their health, preferably in writing.

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