

Tailored Influence Through Theory-based and Application-oriented Narrative Interventions

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ABSTRACT

Narratives are an intrinsic mode of human communication that have an important and longstanding function in influencing people, societies and cultures. However, Persuasive Technologies have largely ignored or are unaware of this. Furthermore, persuasive technologies do not adequately integrate understanding from areas such as the social sciences, to their full potential. This research uses narratives to link between theory and application of behaviour change, by mapping narrative elements to both theoretical constructs and system design features. An integrative, conceptual model of behaviour change is presented, and empirical studies on the persuasive power of narratives are reported. These suggest an association between narrative “relatability” to its potential audience, and the strength of impact in terms of influence. Informed by these, a prototype mobile application is developed, to provide a platform that could deliver tailored persuasive narrative interventions to enhance or even counter messages relevant to specific contexts, including defence and security.

Author Keywords

Narratives; persuasive technology; behaviour change, influence; relatability; tailored interventions.

INTRODUCTION

Stories and narratives are a core means of human communication, and a key process by which socio-political organisations disseminate information to the public [1]. Their ability to permeate and persist in every society, culture, ethnicity, race and religion, as well as their persuasive potential [2], have established narratives as a theoretical, empirical and methodological point of investigation across many disciplines [3, 4].

Narratives are delivered through a variety of media including digital systems. However, in Persuasive Technology (PT), narratives are underutilised as primary means of persuasion [5, 6]. Also, computing systems that support behaviour/attitude change typically do not fully leverage the advantages of established psychological theories of behaviour change [e.g. 6-8]. Whilst these theories provide a multitude of determinants that influence and change behaviour, they are not commonly incorporated into digital solutions [9].

This research utilises narrative interventions, capitalising simultaneously on their universality and persuasive nature,

to provide a bridge between theory and application of behaviour change. Narrative structural components were mapped to elements of relevant theories, as well as to specific design features of a prototype persuasive application to ensure targeted and potent influence.

Initially, the underlying theoretical infrastructure was established in the form of an “integrative, conceptual model of behaviour change” (ICMBC). The model maps narrative features to theoretical constructs and provides insights on persuasion. A series of empirical studies, investigated the persuasive potential of narratives from both the delivery and reception perspectives. From these, the new factor of “relatability” was determined and linked to the ICMBC. This identified a correlation between the relatability of a narrative to its potential audience, and the efficacy of the persuasive narrative.

Since relatability of a story is highly dependent on the individual or audience type, a prototype mobile application is being developed to provide storytellers, policy and decision makers a platform to tailor persuasive narrative interventions to the intended audience. This app is theoretically informed by the ICMBC with a transparent connection to its design features, thus providing targeted messages of influence. These tailored narrative interventions are strategic tools of communication, capable of countering arguments and other types of messages, within defence and security contexts.

BACKGROUND

Narrative research and persuasion

Throughout the last three decades, narrative research has become increasingly popular in the social sciences (e.g. psychology, economics, political science) [3, 10], and in many application domains such as education, law, health, psychotherapy and social work [3, 11]. The term ‘narrative’ apart from its universality within social research is also frequently present in popular discourse in the form of people’s everyday ‘narratives’, and ‘narratives’ of events and situations [3]. Whilst there is no unified definition of narrative¹ [1], in the context of this research narrative will be defined as the recounting of events that are presented in a structured manner, describe cause-and-effect relationships and providing information about scene, characters, and

¹ Narrative and story will be used interchangeably.

struggle; it generates debatable outcomes or unresolved dispute, and provides resolution [1, 2, 11].

Regarding persuasion, narratives have been used as interventions of influence in different forms (e.g. entertainment education, testimonials, storytelling, public service announcements, advertisements) [1, 2, 4, 29] in science, education, health contexts, but also importantly the mass media [4, 29]. The latter is highly relevant when narratives act as mechanisms of idea communication since most non-expert audiences use them as their primary source of information. The efficacy of narrative persuasion is highly dependent on situational factors, predominantly focused on the target of the intervention (i.e. audience) [4].

Computing and other digital systems are becoming the core distribution channels for narrative interventions. Digital storytelling and interactive narratives are emerging themes in many research areas, applied fields, and in the new media environment. Digital media can fundamentally influence the way narrative content is created, distributed, experienced and comprehended [12] since audiences can to a degree control the information sought, selected and shared [4]. Despite this, adoption of narratives as a means of influence within Persuasive Technology is not widespread.

Persuasive Technology

Initially, the term Persuasive Technology (PT), was defined as any interactive computing system designed to change users' attitudes or behaviours [17]. This definition was extended to reinforce the systems' transparent nature and use of persuasion and influence rather than coercion or force [18]. In PT the use of narratives as an explicit means of persuasion is limited. Some systems use stories to shape social beliefs [19] or induce social influence [20], or apply narrative in persuasive game settings [16] and others use storytelling in educational settings [15]. Compared to the growing research in this field, this attributes limited scope compared to other motivational affordances (i.e. persuasive elements).

A recent review of 95 empirical studies in PT [5] indicates the most common motivational affordances are visual/audio feedback, social support/comparison, and persuasive messages/reminders. The type of feedback and messages appears to be predominantly statistical/quantitative in nature with narratives not being explicitly used and evaluated as a means of persuasion. Similarly, narratives are not extensively used in related areas that are even arguably more story-related such as gamification. In many games, the narrative or plot of the story is an essential aspect for engaging and relating to the user. Nevertheless, a recent review of 24 gamification empirical studies [6], indicates that only 25% of the reviewed studies use the story/theme of their system as a motivational affordance.

Even when an inherent connection between persuasive technology is known to exist with behaviour change and theories in the social sciences, many persuasive systems do

not exploit this or use the connection effectively [8]. A recent empirical review (85 papers) in the application domain of health and wellness, (the most popular application domain of persuasive systems [6]), showed that 55% were not informed by any theory [8]. Furthermore, many studies mentioning relevant theories did not specify how they informed the persuasive intervention design.

Consequently, a dissociation between theory and application of behaviour/attitude change seems to exist within the field of PT. Narratives having been explored theoretically in adjacent disciplines due to their vicarious experiential nature [14] and having targeted persuasive potential could provide a link between the two. This offers an opportunity to exploit narratives within PT incorporating their advantages and mapping theoretical concepts to design features.

THE PROCESS

Understanding behaviour and its change is essential for exploring the limitations identified including the appropriate connection of narratives to both theoretical constructs (determinants of behaviour) and design features. Consequently, it was necessary to develop a model of behaviour change underpinned by relevant theory.

Integrative, Conceptual Model of Behaviour Change

A five-step iterative process produced an *integrative, conceptual model of behaviour change* (ICMBC). The initial version of the model (Figure 1) uses five of the most prevalent theories of behaviour change as its basis². Social-Cognitive Theory was the starting point with the remaining theories added using their common construct of self-efficacy as a reference point. The ICMBC was never intended to replace these theories, rather to act as a lens through which to review PT literature, and remains a constant theoretical reference point in this research.

Narratives and linguistic framework; inks to ICMBC

The relevance of selecting the narratives as a point of investigation was enhanced through the ICMBC. As mentioned before stories are often grounded in Social Cognitive Theory³ [1, 14] which is the base of the model providing more intuitive links to theory. Additionally, narrative persuasion is more potent regarding attitudes [e.g. 4] and intentions [e.g. 26]. Narrative interventions targeting these shape a person's worldview by describing "possible worlds" [13] and escape from the usually prescribed "baby step" [17], explicit goal-behaviour.

² Transtheoretical Model of Change [21], Theory of Planned Behaviour [22], Social-Cognitive Theory [23], Self-Efficacy Theory [24] and Health Belief Model [25].

³ Use of role models and vicarious experiences

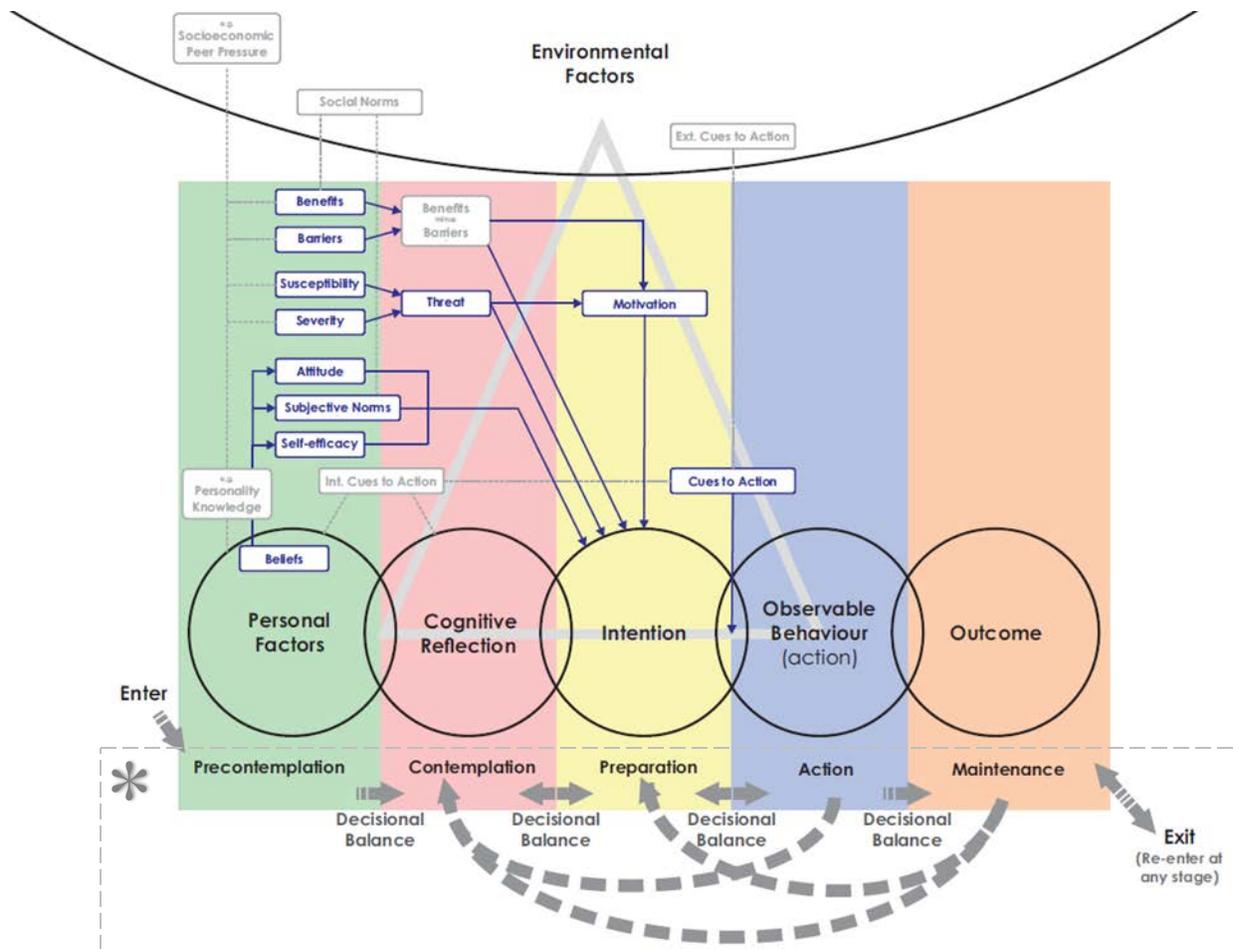


Figure 1. Initial version of the Integrated, Conceptual Model of Behaviour Change (ICMBC).

This could induce a longitudinal change similar to narrative therapy where a person alters the way they perceive relationships, understand past experiences and handle future expectations [14].

However, narrative data require systematic analysis and structural understanding through a linguistic framework. The framework that was selected for this was the Labovian framework of narrative analysis [27] due to its prevalence, and intuitive mapping of its elements to constructs of the ICMBC.

It postulates that a narrative can be analysed using six structural elements. These were mapped to different stages of the ICMBC as is shown in Table 1. This provided an understanding of which parts of narratives affect specific psychological determinants of behaviour, as well as in which stage towards behaviour they would have more impact (Figure 1*). A series of research questions stemmed from this procedure that were explored in early studies.

Exploratory studies

Three early exploratory studies aided the development of the infrastructure for narrative analysis, persuasive potential and capturing narratives in a digital medium. The first

exploratory study compared oral and written accounts of stories about change and its main outcome was that emotion-related clauses were systematically added to the oral version of the stories, potentially providing more points of contemplation for the audience.

| Labovian Framework Element | High Level ICMBC Stage / Construct |
|----------------------------|---|
| Abstract | Not specific but more like an instance of a full path to the behaviour and outcome |
| Orientation | Personal Factors / Environmental Factors |
| Complicated Action | Usually appear in pairs (CA followed by E) and lead to the highlight of the story: Cognitive Reflection / Contemplation / Intention / Preparation / Cues for Action |
| Evaluation | |
| Resolution | Observable Behaviour / Action |
| Coda | Outcome / Maintenance |

Table 1. Structural elements of the Labovian Framework of Narrative Analysis and their link to the ICMBC.

The second study, using the same participants, explored the transformation of the previously written stories about change⁴, into stories that would influence their audience. Interestingly, the storytellers attempted to engage the audience by systematically incorporating more orientation information (setting the scene) and evaluative clauses that show actors' emotions. This is potentially an attempt by the storytellers to "transfer the experience" [28] of the actor to make the story more compelling and influential. This the audience confirmed. Additionally, the audience reported that for them to be persuaded, it was important that the context (i.e. theme, actor, environment, behavioural situation) of the story related to them and they could perceive this relationship. Finally, the participants identified that a story was more influential to them if it was driven by a problem/issue and its potential solution.

In the final exploratory study, the same focus group of storytellers produced a form that would capture a narrative about change in a way to provide a mapping to structural elements of the Labovian framework.

Apart from the useful insights gathered from the exploratory studies, they acted as a basis of piloting the methods and procedures for future empirical studies.

Study on persuasiveness: the storyteller perspective

This empirical study built upon the exploratory studies focused on the persuasive potential⁵ of a narrative from a storyteller's perspective.

Methodology

The study was conducted to compare 'neutral' versus 'persuasive' stories (systematic change in structural elements). Participants were asked to provide a story about change using a refined story-form. Then, participants were requested to write a persuasive version of their previous story (guidance was provided). They were also asked open-ended questions on their story and persuasive stories in general.

Participants

For this study 20 participants were recruited via social media, university noticeboards and by word of mouth. No specific requirements were needed for participation. From the 20 participants that gave stories in part 1, 10 participants completed part 2 fully providing intervention versions of their previous stories. The participants received a voucher upon successful completion of the study.

Results, discussion and implications

The data collected provide meaningful evidence on how storytellers create persuasive stories. Naturally, the stories

⁴ The written medium was chosen to avoid confounding aspects of the delivery of the story (e.g. body language.)

⁵ Its capacity to change knowledge/understanding, attitude, intention and/or behaviour regarding the issue/topic described.

were linguistically analysed to determine systematic differences between the number and type of clauses of a 'neutral' story and its persuasive intervention version. Interestingly, while the "sequence of events" part of their intervention, could be linguistically analysed appropriately, there were additional elements in the persuasive story that could not be attributed to any of the structural components of a Labovian narrative as seen in the example in Figure 2.

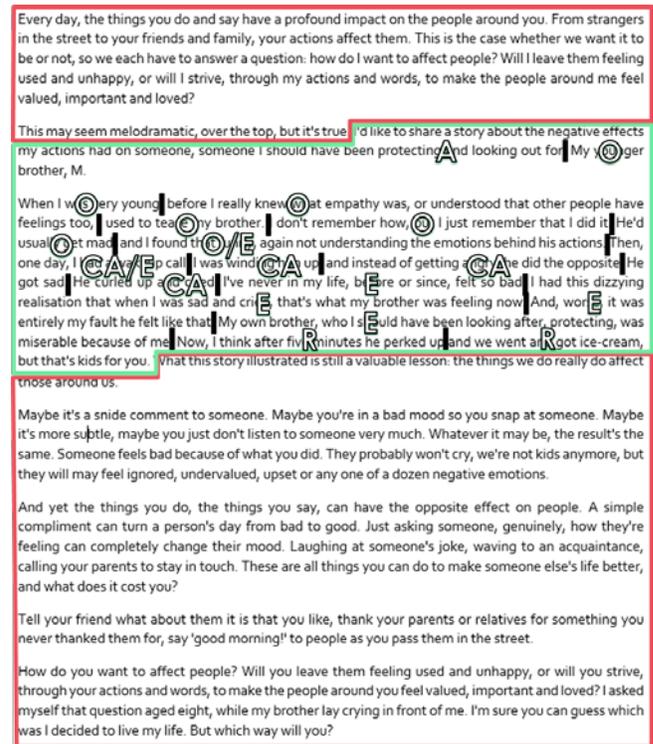


Figure 2. A persuasive story where the "narrative part" is analysed according to Labov's Framework (green). The remaining text (red) is written in a format that cannot be attributed to it but offers persuasive content.

These elements will henceforth be called 'meta-persuasive factors'. A thematic analysis of them with inductive coding identified common themes namely, *examples, strategies, suggestions, lesson learned/taken away, direct contact with the audience* (e.g. use of "you", direct questions). Combining these observations with the responses of the open-ended questions it was identified that most storytellers attempt, to their understanding, to make their intervention story relate as closely as possible to their audience in an effort to persuade them⁶. In addition, it appears that they believe that describing the context of the story thoroughly makes the intervention more compelling. They endeavour to link unfamiliar situations with familiar ones and try to

⁶ e.g. P5 "[...] Story should be somewhat relatable for most people, as should the negative actions/things they could do to help others."

project the experience of the actor onto the audience⁷. Finally, most storytellers suppose that story is more influential when its actors are facing issues/problems and they are overcoming them⁸. These elements appeared in different combinations mostly in the meta-persuasive factor sections of the persuasive stories gathered (Figure 3).

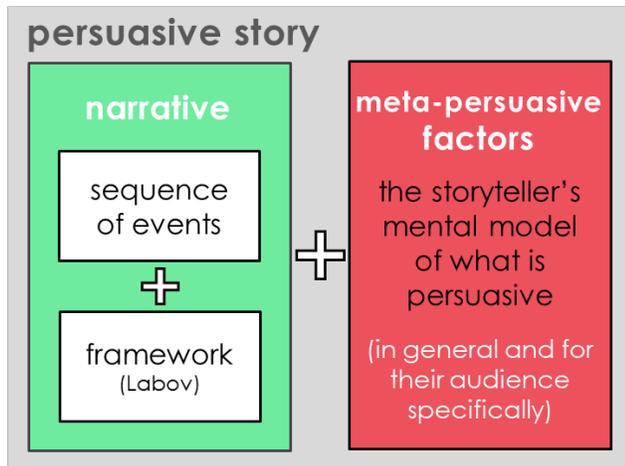


Figure 3. Diagrammatic representation of a persuasive story.

Naturally, the meta-factors were examined against the ICMBC to determine links to theoretical constructs. Initially, the relevant constructs of the model were set in a grid and the meta-persuasive parts were thematically analysed with deductive coding. When elements of the meta-factors were interpreted to affect specific constructs, the occurrences were recorded. As a second step, the Transtheoretical Model (TTM) part of the ICMBC (Figure 1*) was used to weight the affected determinants. This was performed because information can influence members of the audience differently when they have diverse degrees of familiarity with the topic/issue described. Finally, deductive coding thematic analysis was used to map the techniques, suggestions and strategies that were recommended by the storytellers with the *processes of change* of the TTM [21]⁹. In other words, it was identified which stories, according to their meta-persuasive factors, would be more influential to audience members regarding their behavioural situation.

⁷ e.g. P19 “[S]cene setting and imagery [...] it would help them picture the view”

⁸ e.g. P9 “Yes, [be]cause they decide which argument and aspect of the story gains the main focus. Either it has a message or it is just a story that people listen to and ignore as they can't relate or won't relate to it due to personal ignorance or values.”

⁹ Consciousness raising, dramatic relief, environmental re-evaluation, social liberation, self re-evaluation, self liberation, stimulus control, helping relationships, reinforcement management and counter conditioning.

To sum up, the main outcome of this study was that when writing narrative interventions, the storytellers attempt to make them as relatable as possible to their potential audience. They used explicit descriptions of the message and context of the story, provided suggestions and constructed their stories around conflict or issues, in line with narrative persuasion research [1, 2]. The inevitable next point of investigation was to test whether the elements that the storytellers perceived as persuasive were recognised as such by the audience.

Study on persuasiveness: the audience perspective

This empirical study was created to test the meta-persuasive factors regarding the relatability of a story to its potential audience and their effect in terms of influence.

Methodology

To set up this study, a single story was selected¹⁰ from the ones provided in the previous study. Different manipulations of the contents were provided to four different participant groups as an intervention. Participants assigned to *Group A* received the full story as created by the storyteller. Those in *Group B* received just the narrative part (i.e. structured sequence of events). *Group C* received just the meta-factors and finally, *Group D* acted as a control group since they received a length of text that was not a persuasive story (an article about Venus de Milo) and was not about the same topic.

An online survey platform was used to distribute the study. After the briefing, participants were given a pre-questionnaire to examine changes on understanding, attitude, intention or behaviour towards the topic by reading text with different degrees of meta-factor involvement.

Participants were randomly assigned to one of the four groups and after reading the provided text, they answered questions about the story and its perceived intended message. Participants were also asked to comment on elements of the story that they identified as persuasive and give their rationale. In addition, the audience were asked to rate the importance of ‘*relatability of context and topic to them*’ and ‘*stories informed by issues/problems and their solutions*’ regarding influence. Finally, open-ended questions about digital stories were asked and the post-questionnaire was completed.

Participants

For this study 25 participants were recruited via social media, notice boards and by word of mouth. The only requirement was no involvement in previous studies. The participants received a voucher upon successful completion of the study.

¹⁰ Selection was made based on the universality of its topic (social relationships) and its rich narrative and meta-factors.

Results, discussion and implications

The pre/post-questionnaire data suggest a stronger influence of the full persuasive story (condition A) compared to the other conditions (on examined factors), however the number of participants per condition does not allow us to treat these as more than indications of our initial assumption.

Regarding the qualitative data, they suggest that the meta-factors influence the understanding of the *central event* of the story¹¹ and the *intended message*. Participants that received the full persuasive story or just the narrative could accurately identify the central event of the story, while participants that received just meta-factors were less successful in doing so. This shows that the narrative part acts essentially as infrastructure for the intervention's message. Interestingly, all participants (groups A-C) could describe accurately the intended message of the story which shows that both the narrative and meta-factors are relevant for its formation.

With reference to relatability, the majority (60%) of the participants from all groups responded that the central event and context of the story matters to them in terms of persuasiveness. Relatability was also mentioned in the answers of the open-ended questions on influence¹². Additionally, the audience endorses the persuasiveness of the storytellers' strategy to describe the context of the story thoroughly¹³.

An interesting point is that participants from group 2 (narrative only) when asked *why* the above are indeed persuasive to them, limit their responses to context relatability. However, participants from groups 1 and 3 (full story, meta-factors only) unravel more the concept of relatability regarding persuasion. In their responses, they also mention themes that were identified in the analysis of the meta-factors in the previous study. As such, the relatability of examples, strategies, suggestions and the direct contact with the audience appear to be persuasive factors for the audience¹⁴. Another important result of this study, supporting the storytellers' assumption, is that a problem/issue and its potential solution make a story more persuasive for the audience indeed. Participants almost unanimously (90%) reported the importance of a story to be informed by a real, significant issue and offer solutions.

¹¹ Labov: reportable event; the reason the story is told.

¹² e.g. G1-P10 "*The narrator's strong emotions in a relateable situation.*" or G2-P24 "*The relation with my own life*"

¹³ e.g. G3-P8 "*Direct questions to the reader, examples, painting a picture I can imagine*"

¹⁴ e.g. G3-P5 "*They're practical examples that can directly be applied to my life, and allow me to retrospectively find instances of them*"

To summarise, the study showed that there is a significant overlap of what the audience thinks is persuasive and what the storytellers do. It revolves around the concept of *relatability* which is not limited to the context of the story (e.g. topic, actor, behavioural situation) but is extended to relevance of meta-factors (e.g. applicability of strategies in the audience's life). In addition, a full persuasive story appears to be more powerful in terms of relatability and therefore influence since it combines message, context as well as strategies, examples and suggestions.

ANECDOTE: A PLATFORM FOR TAILORED INFLUENCE

Presently, narrative communication is performed mainly through digital mass media. The relevance them is not only limited to 'home' storytellers but is also extended to policy makers and decision makers in positions of authority.

The studies presented in the previous section describe a methodological approach for narrative analysis, narrative persuasive interventions and tailored influence through relatability. They also provided valuable theoretical and empirical insights. At this stage, the practical exercise is the combination of their outcomes to provide a framework that supports creation and delivery of *digital tailored narrative persuasive interventions* and will be the basis for evaluation of the methodology and its effectiveness for different user 'archetypes'.

A prototype Android application, Anecdote, is being developed to provide a digital solution to the above. The app has two main modules. On the one hand, Anecdote provides a sharing feature that makes the created narrative intervention available in text form to applications that accept that resource type (e.g. social media, email clients etc). It also provides a community repository with stories that can be shared within the system.

On the other hand, the story creation module utilises the advantages provided by both a properly structured narrative and the meta-factors that would make a story more relatable to its potential audience. The user is obligated to follow the guidance of the system and addresses both aspects, through a controlled sequential process that leads to a tailored narrative intervention.

Relatability (i.e. persuasiveness) is achieved by considering the story context and the behavioural state of the audience. The author receives generic tips (e.g. message, conflict and resolution) but also has access to adapted guidance related to the topic/theme of the story and the state of the audience regarding the issue or problem described (Figure 4)¹⁵.

¹⁵ e.g. A persuasive story about smoking cessation should address differently new smokers that don't know its dangers and people that have been diagnosed with respiratory issues and want to reduce it.

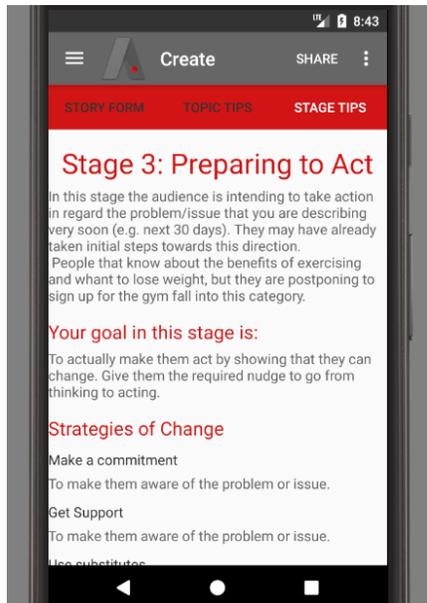


Figure 4. Anecdote Story Creation: Tailored influence guidelines and strategies of change according to the stage of the intended audience selected by the author.

A goal of this research was to link theory and application of behaviour change. Figure 5 presents an example feature of Anecdote (the topic and stage selector) which is largely based on categorisation of the potential audience to a stage of change of the Transtheoretical Model part of the ICMBC (Figure 1*). Interestingly, this theory-informed feature of enhancing relatability through specific strategies is also directly linked with the *tailoring* principle of Fogg [17].

To sum up, Anecdote provides a prototype digital solution for the creation and delivery of tailored narrative persuasive interventions. The design choices made are informed from theory through the ICMBC and based on our methodology. Its current version provides a comparison/mapping basis of PT design guidelines to its features, providing connections between theory and application of behaviour change. Its potential in distributing or even countering of messages is yet to be explored.

LIMITATIONS AND IMPLICATIONS

Naturally, the research has limitations. To begin with, the theoretical infrastructure of this project, the ICMBC, is by its nature conceptual. While for this stage of research its use is appropriate, it does not provide the extensiveness and rigour of the original frameworks that were used for its construction are still available for further detailed reference.

In addition, mappings of narrative elements to theoretical constructs, thematic links of meta-factors to the ICMBC as well as PT design principles to Anecdote's features while parsimonious with the conceptual model require further empirical assessment.

Another limitation of the project is the relatively small number of participants. Future studies would have to be

more targeted (fewer factor manipulation) and shorter to attract a greater number of participants. Nevertheless, while the quantitative data collected can only be interpreted as indications, these were cross-referenced and endorsed with the qualitative data which were extensive, rich and valuable. Furthermore, it must be noted that Anecdote is still under development, thus its efficiency, usability and links to additional PT design principles are yet to be evaluated.

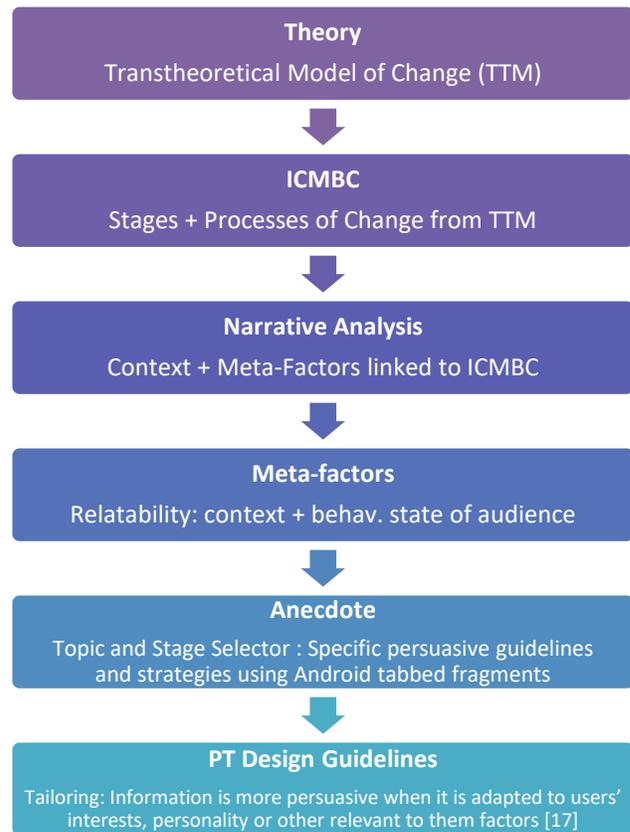


Figure 5. An example of the link between theory and application of behaviour change through narrative interventions.

When considering tailored digital narrative interventions these can be used to enhance but also *counter* messages. The suggestiveness, the social-normative influence and the prevalence of narratives in cyberspace make them a powerful but easily exploitable tool. Notably, narratives are strategically used to disseminate values, ideology and justification of terrorist groups to the public [29]. These narratives are leveraging on the persuasive efficacy of the medium to change beliefs and attitudes to promote extremist goals, in other words to fuel radicalisation. This is especially relevant presently since terrorist groups use mass and social media to “cyber-groom” and recruit sympathisers and potential members [29].

This illustrates the importance of a platform that could create and distribute tailored *counter-narratives* to

contradict the themes that inflame and preserve terrorist narratives. The methodology described and the extendibility of Anecdote could provide the infrastructure for methodological, empirical and practical investigations of guidelines specific to counter-narratives and the formation of an appropriate counter-messaging strategy. These could include structured counter-arguments weaved to plot-driven [29] and theoretically-informed narratives, capitalising on the relatability factor and other domain-specific strategies.

CONCLUSION

This paper sought to establish the prevalence and relevance of narratives as a means of influence especially in digital and social mass media. Yet, persuasive technologies do not exploit narratives adequately. In addition, an apparent dissociation of persuasive systems with relevant theories of behaviour change exists. It was identified that narratives could act as a bridge between theory and application of behaviour change.

Initially, structural components of narratives were mapped to theoretical constructs through an integrated, conceptual model of behaviour change (ICMBC). Empirical studies on the persuasive power of narratives were conducted and “meta-factors” that authors add to their stories to make them more impactful were identified. The concept of *relatability* emerged as the predominant factor that would make a story more persuasive from both the storyteller and audience aspects. This process informed a theoretical and methodological mechanism for narrative analysis, narrative persuasive interventions and tailored influence through relatability.

A prototype mobile application has been developed to act as a digital representation of this mechanism supporting tailored persuasive narrative interventions. Since narratives are a strong driving force that affect de facto many socio-cultural and socio-political factors the potential utilisation of this platform could provide to policy makers and people in positions of authority a means to study undesired narrative deployment, but also disrupt networks that exploit narratives for radicalisation and distribute propaganda by using tailored counter-narratives.

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