

Chapter 5

Avoiding Adverse Consequences from Digital Addiction and Retaliatory Feedback: The Role of the Participation Continuum

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ABSTRACT

This chapter looks at the role of the participation continuum in helping to improve relationships that have been damaged as a result of digital addiction. Digital addiction in this context refers to what happens when a person with a compulsion who is not getting that compulsion fulfilled turns to the Internet and other digital technologies in order to fill the void. The chapter is a case study of two people called Person D and Person G in order to make them anonymous. Using medical and other records, it was found that a number of different interventions using the participation continuum could have resulted in changes in the relationship in either holding it together or preventing one party from posting malicious and defamatory comments. The chapter found that a theoretical model, with algorithmic principles applied, called the transitional flow of persuasion model would be able to understand the impacts of digital addiction and provide a means to remedy it.

INTRODUCTION

In the digital age, relationships offline are rarely not reflected online. Whilst it was once rude to announce relationship commencements or break-ups online, now it is expected. Regardless of whether a relationship started online, it is likely it will be manifested there during it and after it. This chapter dis-

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cusses some of the problems arising from having relationships in the digital age. This includes the way that excessive use of the Internet can lead to the exclusion of giving attention to one's partner and how one may be abused by a partner after a break-up if they don't feel they had enough closure, for instance. These are called digital addiction and retaliatory feedback, respectively.

Conceptualising Digital Addiction

There have been a number of terms used to describe the phenomena where people spend so much time online that it has an adverse affect on their physical, mental, and social wellbeing. One of the more established is called *Internet addiction* (Young, 1998a; Young, 1998b), which treats the Internet no differently from alcohol or nicotine, and is thus unsuitable as the Internet is an environment that gives off stimuli rather than a stimulus on its own. Indeed it has been found that Internet users are often so immersed in the environment that they lose track of those around them (Bishop, 2007b; Csikszentmihalyi, 1990; Turkle, 1995). Other terms have included *problematic Internet use* (Caplan, 2003; Yellowlees & Marks, 2007) and *compulsive Internet use* (DeLonga et al., 2011). However, this chapter adopts the term *digital addiction*. The essence behind this term is not that the Internet or computers are seductive or compulsive on their own, but are used as a means to form habits, such as abusing people online through Internet trolling. Therefore, the point is that people are not addicted to digital technologies, but the use of the Internet and other technologies is an alternative not only to nicotine, alcohol, and other substances, but other compulsions such as watching television. In other words, if a person was not getting their kicks from forming habits with digital technologies, they would be forming them in some other way.

Conceptualising Retaliatory Feedback

Retaliatory feedback refers to the situation where if a person feels criticised by someone, whether online or offline, they will post comments and criticisms online to try to redress the balance (Malaga, 2013). For instance, a politician who claims to be a disability champion, but treats disabled people badly, could have articles written about them online which point out such a discrepancy. In this example, such a situation is free speech, as politicians should expect to be held to account for saying one thing and doing another. In some cases, however, it can result in the unfair damaging of a person's reputation, including things that are not true, or otherwise exaggerated (Bishop, 2014d).

BACKGROUND: THE PARTICIPATION CONTINUUM

The participation continuum (Bishop, 2011c) provides an understanding of how users can increase engagement with online communities and transform their negative beliefs about participating into positive thoughts and increased interaction. Crucial to understanding how users change their opinions from not wanting to participate in an e-commerce site, for example, to trusting it enough to engage almost intuitively is the concept of flow. When an actor is engaged in a state of flow, their concentration is so intense that they forget about their fears and become fully immersed in what they are doing (Csikszentmihalyi, 1990). Decision making in such a state becomes more fluid and actors respond almost without thought for the consequences of their actions. This has advantages, particularly in chat rooms, where constructive conversations can flourish and people can have a sense of self-worth and feel their contributions are

Table 1. stages of the participation continuum

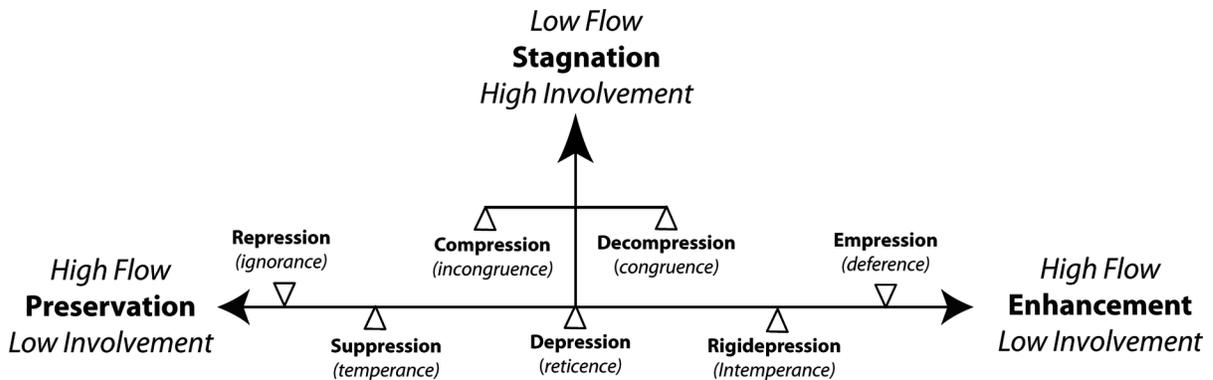
Term (abbr.)	Definition
<i>Empression (emp)</i>	Empression refers to the most rigid and repetitive patterns of behaviour. People at this stage will be very difficult to change, often set in their ways. The name is derived from the term for a female primate in reference to the fact that our original primal ancestors had little self-determination, acting in the moment.
<i>Rigidepression (rig)</i>	Rigidepression refers to the stage where a person is changing from being rigid in their thinking to starting to think about change. The name is derived from our primal ancestor, Africanas Australopithecus, whose mind developed planning ability and the beginning of an awareness of others' needs.
<i>Decompression (dec)</i>	Like compression, decompression is a state of avoiding change. In this case a person will have a bad attitude to others, not being able to share their enjoyment, especially if the person they are comparing themselves with has what they aspire to have, but are unlikely to be able to obtain.
<i>Depression (dep)</i>	Depression refers to the stage where a person doesn't know where they are, being stuck between two places they are avoiding being (i.e. empression, repression). It is derived from a reference to a stage in human development where to get more of what they wanted, primates were forced to work together rather than think only of their own needs.
<i>Compression (com)</i>	Compression is a point where a person is avoiding changing, as a sub-state of depression. Compression is where a person misreads others, feeling everyone is against them or a threat, making it difficult to trust them.
<i>Suppression (sup)</i>	Suppression is a point where a person begins to accept what they can and cannot be. They are more likely to form social relationships with likeminded people, often to the exclusion of those who do not have their limitations.
<i>Repression (rep)</i>	Repression is a point where a person has little awareness of their limitations and focuses on those things important to them. They may take on too much, such as by having lots of friends or tasks, but find it difficult to manage them all, meaning they may feel the need to return to base.

welcomed. Equally, in a state of flow, those users who have an anti-social disposition, known as *snerts* (Bishop, 2013) will not see the consequences of them posting offensive messages, known as *flames*, and particularly the effect this will have on deterring lurkers from becoming posters. The ecological cognition framework allows for decision-making in human-centred computer systems, which introduced the concepts of *deference*, *intemperance*, *reticence*, *temperance*, and *ignorance* (Bishop, 2007a; Bishop, 2007b). These are reflected in the stages of the participation continuum shown in Table 1.

Deference leads to *empression*, intemperance to *rigidepression*, reticence to *depression*, temperance to *suppression*, and ignorance to *repression*. In the case of an online community, an actor will experience empression if on reading a post, for example, they immediately form a reply because of deference. They experience rigidepression if they experience dissonance in posting a message, but overcome it and post because of intemperance. They experience depression where no matter what decision they take, they still experience dissonance because of reticence. They will experience suppression if they bite their tongue by not posting after overcoming dissonance that their actions would not be appropriate because of temperance. They experience repression if they immediately decide to not post without experiencing any dissonance, which is caused by ignorance. These were amalgamated with flow theory to create the *participation continuum*, as presented in Figure 1 (Bishop, 2011c).

As can be seen from the participation continuum in Figure 1, the least amount of dissonance equates to the greatest amount of flow. The higher the state of flow for someone just browsing an e-commerce site, the more likely they are to be *preserving* their position of not being persuaded and purchasing without

Figure 1. The Participation Continuum.



regard for the consequences (i.e. ignorance/repression). The higher the state of flow for a purchaser, the more likely they are to be *enhancing* themselves within the community and be persuaded and therefore buy without regard for the consequences (i.e. deference/empression). At the middle of the continuum is the point between browser and purchaser, resembling the visitor-novice barrier represented in the membership lifecycle (Kim, 2000). This point may have to be navigated many times where a lurker goes from minimal posting to lurking (i.e. where they give up posting) and vice versa (Bishop, 2009; Bishop, 2013; Nonnecke & Preece, 2001; Preece, Nonnecke, & Andrews, 2004).

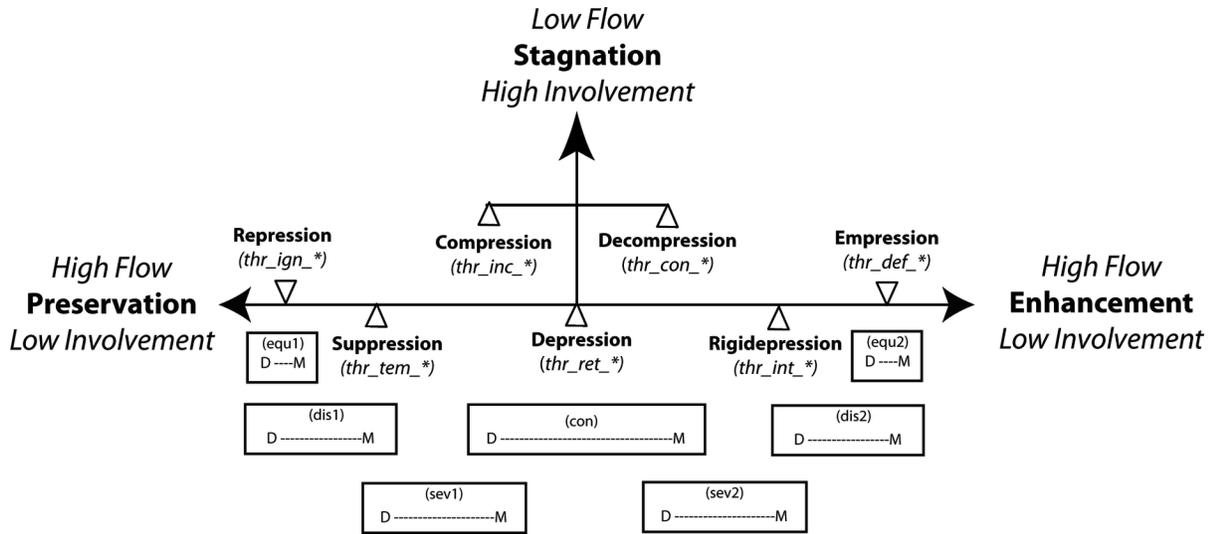
This may follow a cycle where the actor will be under a barrage of constant flaming abuse and cycle around this process of *battering* between what has been called the Bishop 1 (where a person has multiple competing thought streams coming out of and going into nowhere) and what has been called the Otley 0 (where a person is overwhelmed by the oppressive or competing stimuli).

The Role of an Adapted Participation Continuum

The participation continuum (Bishop, 2011c) provides a useful framework for understanding how actors go from preserving a particular state of affairs to what they regard as enhancement. This has been subsequently transformed into the transitional flow of persuasion (TFP) model, which the authors have added variables to, as in Figure 2 below. Pseudocode for the TFP model follows below. It is assumed in the TFP model that actors will always be acting at the level most effective to achieve their goals and consonance of their cognitions. The most effective level is dependent on the situation they have constructed in relation to their cognitions. This is referred to in the model as an *optimum motive situation*.

In the TFP model, the *seduction mechanism* is the successful impression of a single stimulus or synergy of stimuli on an actor to change their cognitions. An example of this would be an advertisement. An actor might go from being indifferent about starving children in Africa to wanting to support a charity if an advertisement uses convincing images and words to persuade them to support the cause. Actors usually choose which set of beliefs to hold based on which are most gratifying or least discomfoting. We call a *seduction mechanism* that gives an actor a sense of gratification a *pleasure* and that which makes them feel discomfoted a *bleasure* (Bishop, 2011a; Bishop, 2014a; Bishop, 2014b; Bishop, 2014e). In terms of online environments, such as an e-dating website, seduction mechanisms could take the form of

Figure 2. Transitional Flow of Persuasion.



persuasive text, as suggested by (Bishop, 2007b), or other persuasive interfaces, such as those explored by (Fogg, 2002). The content in an online community intended to be constructive is known as *kudos* and the content intended to be unconstructive is known as *flames* (Bishop, 2014c).

The element of the TFP model that describes how actors decide to respond to these is the *prospect choice judgment*. It is so named because actors will usually choose a course of action that they think will maximize the prospect of experiencing gratification and minimize the prospect of experiencing discomfort. This differs from the traditional position in economics and persuasion where it is assumed that actors are rational agents who are intentionally acting in their self-interest.

Table 2 presents a number of concepts that can be used to understand the operations of the transitional flow of persuasion model. These include the *optimum motive situation*, the *seduction mechanism*, and the *prospect choice judgment*.

With morality dominated legal systems, an actor who seeks revenge on another, such as revenge porn by Porn E-Vengers, will usually be able to be punished. It can easily be argued that the transgressor is neither being rational nor acting in their self-interest. Furthermore, even if they had not been caught up in the moment, it is unlikely that they would have performed such an injurious act if they had full

Table 2. Concepts reflecting the processes of the transitional flow of persuasion model

Concept	Definition
<i>Optimum motive situation (oms)</i>	The most effective level is dependent on the situation they have constructed in relation to their cognitions.
<i>Seduction mechanism (sm)</i>	The successful impression of a single stimulus or synergy of stimuli on an actor to change their cognitions.
<i>Prospect choice judgment (pcj)</i>	It is so named because actors will usually choose a course of action that they think will maximize the prospect of experiencing gratification and minimize the prospect of experiencing discomfort.

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Table 3. Stages of transformation of the Transitional Flow of Persuasion Model

Concept	Definition
<i>Equilibrium 1 (equ1)</i>	The starting point in the process of change. A person at this stage does not feel they need to change.
<i>Disruption 1 (dis1)</i>	The stage initiated when a person either feels they need to change or are forced to.
<i>Severance 1 (sev1)</i>	The stage where a person accepts they have to change.
<i>Contrience (con)</i>	The stage where a person is unable to know what they need to do in order to change for a more suitable outcome to be realised.
<i>Severance 2 (sev2)</i>	When the person no longer feels the change they made is effective or often when their mind does, then they start to return to the former state.
<i>Disruption 2 (dis2)</i>	When the person starts to doubt whether their new situation is what they want and whether returning to how things were would be better.
<i>Equilibrium 2 (equ2)</i>	The stage where a person has reached a point where their change is accepted and tolerable to them.

awareness of the subsequent consequences when they did it. That is why we believe that these trespasses are done to minimize discomfort, such as jealousy or hurt, or to maximize gratification, such as to feel retribution and a sense of personal justice, referred to in the ecological cognition framework (ECF) as vengeance (Bishop, 2007b).

If one considers Table 3, the *optimum motive situation* in the transitional flow of persuasion is the unit at which an actor is acting with their cognitions most consonant. To go from one side of the participation continuum to the other, the actor needs to break through barriers that are holding them in one particular *optimum motive situation*. For example, if an actor is preserving their status quo, their *optimum motive situation* will be *equilibrium 1*. Once someone or something introduces doubt into that *optimum motive situation*, then the actor will be in a state of dissonance and move their *optimum motive situation* to *disruption 1*. They will then start mediating and dismediating between one *prospect choice judgment* (e.g. set of beliefs) and another. Once they start mediating more toward engaging with the new belief, they will move to *severance 1* where they start to distance themselves from the old belief while still clinging to it for security. As soon as they decide to let go of the old belief, they snap to *contrience* like an elastic band where they are in an ambivalent stage. At this stage, they could either fall back into one of the earlier optimum motive situations or make a leap and settle on the new belief (i.e. *equilibrium 2*).

AN INVESTIGATION INTO USING THE TRANSITIONAL FLOW OF PERSUASION MODEL TO TACKLE DIGITAL ADDICTION

The case study used in this study demonstrates how the participation continuum could be used to ensure that relationships are not damaged beyond repair by digital addiction. It uses documents relating to a couple who have both been victims of traumatic circumstances. While this relationship ended, it will show how this breakup might have been avoided.

Participants and Documents

The participants in this study have had their names changed to protect their identity. Person G was a 21-year-old woman of mixed race and Person D was a 24-year-old man of Caucasian ethnicity. Records were obtained from Person D's general practitioner with his consent, and a fee was paid. The documents

that related to this couple showed clear indications that Person D had digital addiction. A reference in the records state: “It’s clear that [Person D] spends a hell of a lot of time on the Internet, perhaps in excess of ten hours a day. Although he doesn’t use the Internet when he attends a book and speaking club or his political meetings, he seems to be using it at most other times even if they’re watching a film.” It also states that Person D “describes some physical abuse at boarding school at age 8 or 9 and two isolated episodes of sexual abuse in his boarding school.” Therefore, there is a clearly identifiable traumatic incident for which the Internet may serve as a distraction from the relationship difficulties caused because of the effects of such trauma.

Methodology

The methodology of the study involved inspecting the document to find elements that showed either reference to the Internet or signs of addictive behaviour, such as problems with relationships, histories of traumatic abuse, and unsuccessful attempts to give up a compulsive behaviour, such as prolonged use of digital technologies. From this, the findings were paired with the stages of the transitional flow of persuasion model (Figure 2) to test whether the model can work.

Outcome

The outcome of the study shows that the participation continuum and indeed the gamified flow of persuasion model if embodied as the transitional flow of persuasion model can effectively be used to understand how to transform the lives of people with digital addiction.

The Process of Change Explained through the Case Study of the Impact of Person D’s Digital Addiction on Person G

An example of how this might work is as follows. Person G starts at an *optimum motive situation of equilibrium 1*, but Person D thinks it is acceptable to speak to others online instead of watching a film or otherwise spending time with his partner, Person G. Person G says that Person D is “talking more to others than to” her. A traumatic incident occurs that involved Person G, which resulted in changes in her expectations from the relationship. The fact that Person D would say things like “*I don’t understand how someone could do that*” about the incident and that he had “*not really*” been emotionally affected by it changed what Person G wanted, saying that she felt “short of a role” due to his use of the Internet for chatting to others and doing his academic work. The impression on them would cause *bleasure* in terms of not being understood, making the *seduction mechanism* greater than the *mediation ignorance threshold* needed to overcome a *prospect choice judgment of repression*, which would have been to feel nothing about the situation. Person G, as a result of Person D being “*pretty busy*” and not interested on the day the trauma happened and indicating he said he “had to go somewhere” would then enter an *optimum motive situation of disruption 1*. If she has been somewhat convinced that Person D therefore didn’t care for her, then the *seduction mechanism* is greater than the *mediation temperance threshold* to overcome a *prospect choice judgment of suppression* and she will move toward an *optimum motive situation of severance 1*. This would be where she strongly reduces the strength or commitment to her old beliefs, which were that Person D cared for her. If this *seduction mechanism* were to be greater than the *mediation reticence threshold* needed to overcome a *prospect choice judgment of depression*, Person

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Table 4. Examples of retaliatory feedback made by Person G about Person D

Nature of retaliation	Text of retaliation
Made 2 days before Person D's birthday in 2012	"[Person D] has posted videos of me singing on YouTube & has set up a web page about me."
Made on Person D's birthday in 2012	"[Person D] is making defamatory claims against me even though he has already been cautioned by police to take down any content with my name on it as he was arrested for assault in 2004 because he attacked me. i've filed a complaint against him under the protection of harassment act and this is still ongoing. he has been told that they will arrest him should he not remove these and he still doesn't comply with police orders."

G would then have moved to an *optimum motive situation* of *contrience* where she would have trapped between not knowing whether or not she cared for Person D. If at this stage an actor passes the *reticence rationalization threshold*, she will enter the *dilemma cycle*. This process of weighing things up in an uncertain way—through the dilemma cycle—results in Person D rebounding like a yo-yo between *compression* and *decompression*, assuming the *congruence and incongruence rationalization thresholds* are maintained. Rationalization is the process of avoiding dealing with something in a state of denial, such as the breakdown in a relationship, if it would mean changing cognitions the actor wants to keep, such as that she wants to stay with her partner. Until she works out what she truly wants and thus passes the *congruence and incongruence intellectualization thresholds*, then she will be stuck in this no man's land. If she can accept the reality of the situation and determine a solution to her dilemma, then she passes the *reticence intellectualization threshold* and returns to a state of *reticence* and *depression*. Depending on how the Person G intellectualized her dilemma, if the troll or iconoclast is effective in pushing her viewpoint, the *seduction mechanism* will be greater than the *mediation intemperance threshold* needed to overcome a *prospect choice judgment* of *rigidepression* and then Person G will go from an *optimum motive situation* of *contrience* to an *optimum motive situation* of *equilibrium 2* where she has settled on a new belief system and sticks to it. The records showed that there was a commitment by Person G to attend counselling sessions with Person D. This did not happen, as the relationship broke down beyond repair within weeks of the session.

The Impact of the Situation on Person G's Retaliatory Feedback

Records show that Person G made false allegations about Person D, which it appears were to secure accommodation following their break-up. Allegations made were taken seriously by the police, and continued harassment of Person D by Person G with further untruths continued long after their break-up. As can be seen from Table 4, the venom Person G has for Person D is evident in the false statements she made about him over public electronic communications networks.

How Person D Could Have Avoided Digital Addiction and Retaliatory Feedback

It is usually the case that victims of traumatic abuse will seek out situations that they can control to avoid the brain retrieving the traumatic memory, which it does when a person is feeling anxious. In terms of digital addicts, the way they do this is to find websites or other Internet applications in which they feel a sense of gratification, even if this affects offline relationships. Indeed, in the case of Person D, coming to terms with the trauma of Person G would have involved coming to terms with his own trauma. For

example, if a digital addict like Person D forms particular opinions about whether to participate in a given website, factors relating to pleasure will be important, as is often the case for others too (Jordan, 2002). If using the site results in strong feelings of gratification and low feelings of discomfort, they will be more likely to experience *empresion* as a result of *deference* and be persuaded to compulsively use the site, meaning its *stickiness* (Preece, 2001) will be high. On the other hand, if it makes them feel low levels of gratification and high levels of discomfort, then in most cases the stickiness is low. The exception to this would be if a person had trauma reenactment syndrome and sought out experiences that would make the trauma resurface and thus produce more dopamine, which can be pleasurable, then they may experience *repression* as a result of *ignorance*, completely disengage from the site, and find another website or means to manifest their compulsive behaviours. However, if it is a website that they want to use, yet they do not feel comfortable using it, they may be in a state of *reticence* where regardless of whatever actions they take, they will be filled with doubt and potentially regret.

The authors propose an algorithm, as can be seen in Table 5 and Table 6, for determining whether the seduction approaches used by a particular e-commerce site are successful in persuading its users to identify with their brand and purchase from them. In the model, it is assumed that when users are fully engaged with a site and posting reviews or purchasing products, for example, without concern for the consequences, then the state of flow that they experience could be considered to be equilibrium, and all other stages are the actor being in disequilibrium. The website may wish to attempt to seduce the user at any of the prospect choice judgement states (i.e. *repression*, *suppression*, *depression*, *compression*, *decompression*, *rigidepression*, and *empresion*) to persuade them to move through the model's optimum motive situations (i.e. equilibrium, disruption, severance, and contrience) either to increase the amount of interaction the user has with the website or to maintain it (Bishop, 2005). The following section will discuss how the authors' algorithm can assist in taking the user from *ignorance*, where they are completely disengaged, to *deference*, where they are completely engaged.

It is assumed in the TFP model that actors will always be acting at the level most effective to achieve maximum gratification and minimum discomfort. The most effective level is dependent on the situation they have constructed in relation to their cognitions, referred to in the model as an *optimum motive situation*. In the *optimum motive situation* there will be higher amounts of dopaminergic flow and lower amounts of serotonergic involvement (Bishop, 2011b; Bishop, 2012).

Table 5. Transitional Stages for moving from Equilibrium 1 to Equilibrium 2

Process	Transition
1	If <i>optimum motive situation (oms)</i> is <i>equilibrium 1 (equ1)</i> and <i>seduction mechanism (sm)</i> is greater than <i>mediation ignorance threshold (thr_ign_med)</i> needed to overcome <i>prospect choice judgment (pcj)</i> of <i>repression</i> , then <i>optimum motive situation (oms)</i> goes from <i>equilibrium 1 (equ1)</i> to <i>disruption 1 (dis1)</i> .
2	If <i>optimum motive situation (oms)</i> is <i>disruption 1 (dis1)</i> and <i>seduction mechanism (sm)</i> is greater than <i>mediation temperance threshold (thr_tem_med)</i> needed to overcome <i>prospect choice judgment (pcj)</i> of <i>suppression</i> , then <i>optimum motive situation (oms)</i> goes from <i>disruption 1 (dis1)</i> to <i>severance 1 (sev1)</i> .
3	If <i>optimum motive situation (oms)</i> is <i>severance 1 (sev1)</i> and <i>seduction mechanism (sm)</i> is greater than <i>mediation reticence threshold (thr_ret_med)</i> needed to overcome <i>prospect choice judgment (pcj)</i> of <i>depression</i> , then <i>optimum motive situation (oms)</i> goes from <i>severance 1 (sev1)</i> to <i>contrience (con)</i> .
4	If <i>optimum motive situation (oms)</i> is <i>contrience (con)</i> and <i>seduction mechanism (sm)</i> is greater than <i>mediation intemperance threshold (thr_int_med)</i> needed to overcome <i>prospect choice judgment (pcj)</i> of <i>rigidepression</i> , then <i>optimum motive situation (oms)</i> goes from <i>contrience (con)</i> to <i>equilibrium 2 (equ2)</i> .

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Table 6. Transitional Stages for moving from Equilibrium 2 to Equilibrium 1

Process	Transition
5	If optimum motive situation (oms) is equilibrium 2 (equ2) and seduction mechanism (sm) is greater than dismediation deference threshold (thr_def_dis) needed to overcome prospect choice judgment (pcj) of empression, then optimum motive situation (oms) goes from equilibrium 2 (equ2) to disruption 2 (dis2).
6	If optimum motive situation (oms) is disruption 2 (dis2) and seduction mechanism (sm) is greater than dismediation intemperance threshold (thr_int_dis) needed to overcome prospect choice judgment (pcj) of rigidepression, then optimum motive situation (oms) goes from disruption 2 (dis2) to severance 2 (sev2).
7	If optimum motive situation (oms) is severance 2 (sev2) and seduction mechanism (sm) is greater than dismediation reticence threshold (thr_ret_dis) needed to overcome prospect choice judgment (pcj) of depression, then optimum motive situation (oms) goes from severance 2 (sev2) to contrience (con).
8	If optimum motive situation (oms) is contrience (con) and seduction mechanism (sm) is greater than dismediation temperance threshold (thr_tem_dis) needed to overcome prospect choice judgment (pcj) of suppression, then optimum motive situation (oms) goes from contrience (con) to equilibrium 1 (equ1).

Example 1: How Person D Could Have Changed to Accommodate Person G by Moving to a New Equilibrium

When an actor encounters a particular website that might give them feelings of gratification, if they immediately dismiss it as being likely to cause discomfort without regard for the potential opportunity costs of such an action and this decision does not cause them any dissonance, then they can be seen to be in a state of equilibrium where their *prospect choice judgment* is *repression*. The *optimum motive situation* in this occurrence is *equilibrium 1*. It can clearly be seen that the intention of any website is to convert these actors into users by challenging the attitudes they have toward them with the aim to promote stickiness. On the other hand, it might be seen as desirable for an actor like Person D to use websites less for gratification (for organic community dependence) and to take part in offline activities (for organic community dependence). How someone can be transformed from being continually dependent on virtual communities through engaging in a further online activity or whether they can be more dependent on organic communities through engaging in further offline activities will be explained in this section.

Process 1. Moving Towards *Disruption 1*

To start the process of changing from being dependent on virtual communities over organic ones, a *seduction mechanism* is needed. Equally, to use a new website to gain gratification will also require a seduction mechanism to use that over other websites. In the case of Person D, he did not empathise with Person G after her traumatic experience and in fact used the Internet more. This was likely down to not being able to come to terms with a similar trauma he experienced. It can therefore be seen that websites that provide for gratifying escapism require less of a *seduction mechanism* than those that require discomforting understanding by digital addicts when having to engage with those people around them. There would need to be some form of disruption with a strong *seduction mechanism* to get Person D to change. The *seduction mechanism* at this stage perhaps should have been a letter sent by Person G to Person D where she said she did not feel she was ready to fully settle down and needed space. Person D should have interpreted this as Person G feeling lonely because whilst he was in her company physically, he was not giving his full attention to her.

Process 2. Moving Towards *Severance 1*

If he had foresight, Person D might have realised that by not focusing on the relationship that things important to him—like intimacy with a woman—would be lost due to the relationship breakdown. This may not have been so obvious at the time where he went from a highly intimate relationship to one without much intimacy of the kind he wanted. Had he decided to change at this stage—to try to work things out with Person G to regain the intimacy, then he would move from *disruption 1* to *severance 1*.

Process 3. Moving from *Severance 1* to *Contrience*

One way that Person D could have regained the trust of Person G would have been to make an effort to attend her gigs where she would perform music to an audience. At the same time, Person G could have agreed to attend political and religious events with Person D, which were important to him. The commitment to change, rather than how to change, is the most important thing at this stage. That is because at the *contrience* stage, there are a lot of uncertainties, as change is itself difficult, and knowing how to change and what to change is even more difficult. Moving from *severance 1* to *contrience* would therefore have been essential for Person D and Person G to maintain intimacy.

Process 4. Moving from *Contrience* to *Equilibrium 2*

If Person D and Person G had made the commitment to involve each other in their independent lifestyles more, the trust would have meant that a more permanent state of give and take would be achieved. Person D and Person G may then both have had the physical intimacy they had at the start of the relationship, but also they would be stronger due to a more mature relationship. They would therefore have moved from *contrience* to *equilibrium 2*.

Example 2: How Person D Could Have Changed to Accommodate Person G by Moving from *Equilibrium 2* to *Equilibrium 1*

Alternatively, instead of creating a new equilibrium in the relationship, Person G and Person D could have tried to go back to what they had originally, before the disruption in their intimate relationship occurred. This section therefore shows how Person D could have gone from being overdependent on the Internet and returning to the time when he and Person G spent a lot of time together. The transitional stages are referred to in Table 6.

Process 5. Moving from *Equilibrium 2* to *Disruption 2*

After deciding that he did not want to lose the intimacy he had with Person G, Person D would then have to decide to spend less time on the Internet or otherwise using digital technologies. Person D would not be able to do this on his own and Person G would have had to show him that there was more open to him in the offline world than exists in the online world.

Process 6. Moving from *Disruption 2* to *Severance 2*

Had Person G allowed Person D to be more intimate with her and Person D had been made to appreciate that the relationship was breaking down, then his compulsion to use the Internet and other digital technologies would have been reduced. He could then have moved from *disruption 2* to *severance 2*.

Process 7. Moving from *Severance 2* to *Contrience*

If Person D had realised he needed to change—and Person G felt the same way—then he could have moved from *severance 2* to *contrience* where the give and take would have to start, so that a positive gesture by one would have led to a positive gesture by another. Decisions about how to make things work out such as attending the events of their individual interests would become a reality.

Process 8. Moving from *Contrience* to *Equilibrium 1*

After rebuilding the trust and intimacy lost, the romance at the start of the relationship between Person D and Person G could have been resumed. The interest they showed one another with endless emails, voice messages, greetings cards, and letters would have continued.

Example 3: How Person D Could Have Managed the Breakup More Effectively

The breakup of Person D and Person G was within months of them having their appointment with the psychiatrist. Person D was due to return to university to complete a new course, which meant there was even less time for him and Person G to be together, especially as he was also due to start a new job. Due to the lack will of both to change, the breakup was inevitable.

Process 1. Moving Towards *Disruption 1*

Person D wanted Person G to initiate the breakup and Person G wanted Person D to. On the day they did actually breakup, Person G made allegations to the police about Person D, which were virtually identical to those she made about her parents to convince Person D and his family to take her in. This enabled her to move from the family home of Person D in to accommodation normally only accessible to actual victims, as otherwise the option for her would have been to become homeless or go on a housing list. The situation thus put both in the *disruption 1* category.

Process 2. Moving Towards *Severance 1*

The problems for Person D appeared to start when Person G became a victim of crime and his lack of empathy for her and her lack of intimacy with him fundamentally changed the relationship. This lack of empathy for Person G by Person D clearly contributed to her lack of intimacy with him and might explain why following the breakup, she made a lot of malicious and false allegations about him. By showing more concern for Person G whilst communicating that he wasn't getting what he needed from the relationship, Person D could have convinced Person G to move to *severance 1* where they accepted things were not going as they would like.

Process 3. *Severance to Contrience*

At the severance stage, Person D could have helped Person G realise that there were things important to him—studying, politics, and religion—which were not compatible with things important to her—attending music events running into the early hours and watching films that lacked the interactivity of online pursuits or more intimate offline ones.

Process 4. *Contrience to Equilibrium 1*

At this stage, Person D would have moved Person G back to the stage they were at immediately prior to their relationship beginning where they would chat online as friends only. It may then have been possible to move Person G out of his family home by finding her a place, meaning a smooth return to *equilibrium 1* would have been achieved. Whilst immediately following the breakup, Person G would still text and phone Person D, to get a permanent place to live, she needed to make false allegations about him to access support networks.

IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

Future research can explore applying the participation continuum, such as through the transitional flow of persuasion model, in a more systematic sense, such as to improve relationships by embodying it into Internet applications. Also, future research can explore applying the participation continuum and transitional flow of persuasion model in intelligent systems in computers and robots to replicate how humans change their minds.

DISCUSSION

This chapter has discussed some of the problems arising from having relationships in the digital age. Using medical and other records, it was found that a number of different interventions using the participation continuum--through a derivative called the transitional flow of persuasion model--could have resulted in changes in the relationship in either holding it together or preventing one party from posting malicious and defamatory comments. The participation continuum and transitional flow of persuasion model can be used in intelligent systems in computers and robots to replicate how humans change their minds.

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KEY TERMS AND DEFINITIONS

Algorithmic Psychology: The application of psychology to designing systematic processes.

Captology: Captology is the study of computers as persuasive technologies.

Computational Psychology: The design of computer models for human cognition and perception processes.

Ecological Cognition Framework: A framework for understanding behaviour that occurs within online communities.

Human-Computer Interaction: The discipline that brings together psychology, anthropology, cognitive science, and other aspects of the social sciences to understand the way humans use and can be influenced by computer technologies.

Mathematical Psychology: Mathematical modeling of human cognition and perception processes.

Participation Continuum: A model for determining the extent to which someone is participating in a virtual or other environment.

Persuasion Algorithm: An algorithm for making online content more seductive.

Transitional Flow of Persuasion Model: The transitional flow of persuasion model transforms the participation continuum into one that can systematically analyse and influence online behaviour.