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**Title:** How can you persuade me online? The impact of goal-driven motivations on attention to online information

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## Abstract

Individuals are increasingly using the internet to communicate online with many of their interactions being persuasive. Whilst there is some evidence to suggest that persuasion can occur online it is still unclear as to the underlying mechanisms driving this process. The current study aims to address this by examining individuals' attention to, and motivations to process, online information. To achieve this, an information recall paradigm was adopted whereby an undergraduate student sample (n = 91) were asked to recall information which had been presented to them in pre-scripted personally-relevant scenarios. Results identified that peripheral (e.g. contextual) cues activated goal-driven motivations significantly increasing attention to message content (i.e. central information) when personal benefits were implied. Conversely, when personal costs were implied these effects were reversed and information processing significantly attenuated. These results serve to reinforce the notion that online information processing is motivated by goal-driven behaviour and are the first to identify how goals impact on information processing. The findings have implications for both organisations and individuals who use the internet for persuasive purposes (e.g. political campaigning) and are discussed in relation to the dominant theories of persuasion and how they can explain online persuasion.

## Keywords:

Online persuasion, goal-driven, motivation to process, context, cues, attention

## 1.0 Introduction

With individuals becoming increasingly reliant on communicating online in everyday life, understanding the mechanisms underlying online information processing is important as many interactions are aiming to persuade (Harris, ul Islam, Qadir & Khan, 2017). However, online information processing is complex for several reasons. First, communication methods vary with email being considered asynchronous in nature whereas instant messaging (IM) is considered synchronous. Consequently, a communication medium's synchronicity can affect the processing of persuasive information online as email interactions elicit longer response latencies (allowing for deeper processing) as compared to shorter response latencies associated with IM interactions which limit information processing (Kalman, Ravid, Raban, & Rafaelli, 2011; Okdie & Guadagno, 2008). Second, online information processing is also said to be negatively affected by cue availability as the usual cues used in assessing the veracity of information presented in FtF interactions (e.g. visual and verbal) are typically absent (Burgoon, Dunbar & Severin, 2002; Hancock & Dunham, 2001; Olivola & Todorov, 2010). Whilst this is often viewed as being detrimental to decision-making in online contexts, as it impedes information processing (Hancock & Dunham, 2001; Rains, 2007), Walther, Deandra, and Tong (2010) suggest that computer-mediated communication (CMC) is adaptive with individuals seeking out substitute cues. In so doing, as in FtF interactions (Petty & Cacioppo, 1986), an individual's motivation to process is likely to be an important factor when presented with a persuasive request online as this affects attention to information. However, existing online persuasion research is contradictory with some researchers suggesting that processing motivation is attitude-driven (e.g. DiBlasio & Milani, 2008) which can lead to a primacy bias; whereas others suggest it is goal-driven (Wilson, 2015) whereby information is processed based on principles of evidentiary relevance.

Thus, in developing our understanding of the impact that these factors have on processing persuasive online information, this knowledge could have implications for both organisations and individuals in terms of how they tailor messages to persuade people to engage in the desired behaviours (Harris et al., 2017).

### 1.1 *Persuasion Models and Motivation to Process*

An important factor in determining how information is attended to when evaluating persuasive messages is motivation. Theoretical approaches to explaining the impact of motivation have largely focused on the dual process persuasion models of the Elaboration Likelihood Model (ELM, Petty & Cacioppo, 1986) and the Heuristic-Systematic Model (HSM, Chaiken, Liberman & Eagly, 1989). Both models posit that individuals are motivated to hold correct attitudes (i.e. it reflects those that are held by others) and it is the personal relevance of these attitudes are fundamental to driving information processing through personal relevance (Chaiken et al., 1989; Petty & Cacioppo, 1986). Thus, if an individual perceives that the context lacks personal relevance they will not be motivated to attend to, and process, the message and so resorts to quick and superficial (using peripheral/heuristic processes) processing by scanning the message for easy to process cues. Alternatively, when the message is personally relevant motivation is triggered resulting in thoughtful and thorough (using central/systematic processes) processing and scrutiny of the message. This can, however, lead to primacy effects whereby early information (e.g. situational context) biases the processing of later information (Chaiken et al., 1989; Kruglanski & Thompson, 1999). As such, these dual-process models are unable to fully account for the impact of a primacy bias as they are constrained by the need to maintain correct attitudes – an issue which is overcome by Kruglanski and Thompson's (1999) unimodel (UM) of persuasion.

The UM advocates a single persuasion process whereby individuals are motivated to achieve goal satisfaction as opposed to holding correct attitudes (Kruglanski & Thompson, 1999). As such, the persuasion process is context dependent as motivation to process the information presented is driven by self-interest concerns which are triggered by the contextually activated schemas (Wilson & Lu, 2008; Yukl, Kim & Falbe, 1996). This then results in goal-driven behaviour with individuals aiming to maximise personal benefits and minimise personal costs (Darke & Chaiken, 2005). Consequently, according to the UM approach, different contexts will activate different self-interest motivations (based on the salience of the context to an individual's goals and the associated costs and benefits) and so individuals will focus on, and appraise, cues which provide relevant information for making decisions in terms of protecting self-interest (Darke & Chaiken, 2005; Pelletier & Sharp, 2008).

According to the UM, this is achieved by individuals appraising information presented for its evidentiary relevance, attending to any information (central "arguments"/peripheral cues) which is perceived as relevant regardless of its position (Kruglanski & Stroebe, 2005; Kruglanski & Thompson, 1999). Whilst almost any available information can be construed as evidence it does need to facilitate propositional reasoning as this is the foundation of the evaluation process. Thus, the persuasive information attended to should be part of a subjective syllogism (which does not necessitate engaging in explicit syllogistic reasoning) and comprise a premise and conclusion for evaluation purposes (Erb et al., 2003). Additionally, in terms of processing Kruglanski et al. (2006) assert that, irrespective as to whether it is part of the argument presented or cue-based, relevant information will be more persuasive (i.e. have more attention paid to it) if it is presented early (i.e. primacy) in the interaction or if it appeared later (i.e. recency) under conditions of high motivation. Together this suggests that under conditions of high motivation later information

will mediate any initial bias thereby alleviating the biasing issues arising as a consequence of basing evaluation on attitude consistent information as advocated in the dual-process accounts of persuasion.

With regards online persuasion research is somewhat limited and findings contradictory. For example, San-Cabezudo, Gutiérrez-Arranz and Gutiérrez-Cillán (2009) suggest that, for web-based advertising, online persuasion is more likely to follow UM processes as central and peripheral processes act jointly in an evaluation with peripheral processing serving to enhance or reinforce the impact of the information presented. However, research by both Guadagno and Cialdini (2002) and DiBlasio and Milani (2008) suggest that for interpersonal communication persuasion follows a dual-process route with the more attention being directed to the message in online contexts than in FtF interactions. Whilst van der Heide and Schumaker (2013) agree that attention is likely to focus on the message in online persuasion, they suggest that research needs to consider the impact of factors such as personal goals and variations in the availability of heuristic information on persuasion processes. As such, conclusions about the online persuasion process need to be treated with caution as they focus on a single context and a single online presentation method and fail to consider the impact that factors such as online communication medium, personal goals, context, etc. may have on message evaluation. Van der Heide and Schumaker (2013) have begun to address the use of heuristics in their Sociotechnical model of online persuasion. This model acknowledges that individuals are likely to attend to, and encode more, social (interpersonal) information in online interactions and use this heuristic when evaluating the information presented. However, although this model allows for the simultaneous use of both systematic and heuristic (interpersonal information) processing it still neglects a consideration of the possible impact of heuristics activated by context and possible associated goals on online decision-making.

### 1.2 *The Role of Context and Goals in Persuasion*

This is, potentially, an important consideration as, due to the absence of paralinguistic (i.e. visual and vocal) cues, the salience of context is heightened in online interactions as it provides both goal and social identity cues which vary in importance due to their personal relevance and impact to the message receiver (Walther, van der Heide, Ramirez, Burgoon, & Peña, 2015). Thus, when interacting online, individuals are likely to treat the context as a prime. This prime then serves to activate relevant schemas (or heuristics) regarding expectations, situational norms, and implied group memberships which are then used to facilitate message evaluation (Argyle, Furnham, & Graham, 1981; Lutz & Kakkar, 1975; Walther, Slovacek & Tidwell, 2001; Yukl, et al., 1996). In so doing, individuals are purported to, subsequently, systematically process the information presented so as to find evidence to confirm the expectancies (or hypotheses) generated in respect schemas activated (Bodenhausen and Lichtenstein, 1987; Petty, Tormala, Hawkins, & Wegener, 2001; Snyder & Swann, 1978) – behaviour which is more akin to UM processes (Kruglanski & Thompson, 1999) than the dual-process ELM (Petty & Cacioppo, 1986) or HSM (Chaiken et al., 1989).

Thus, in online interactions, the absence of paralinguistic cues is likely to encourage individuals to attend to contextual cues which activate relevant schemata and heuristics to use when processing persuasive information (Walther, et al., 2015). On encountering these cues goal-driven motivations should be aroused immediately and will continue to be formed throughout the interactions (Wilson, 2015; Wilson, Hall-Phillips & Djasabi, 2015). According to Wilson (2015) such goal-driven behaviour motivates information processing and acts to predict intention to comply based on the premise of maximising gains and minimising losses (Darke & Chaiken, 2005; Wilson & Lu, 2008). In so doing when personal benefits are perceived (in concordance with goals) processing effort is increased resulting in increased attention to the information presented; whereas, if costs are implied the information

is ignored and processing attenuated to prevent dissonance (Metzger & Flanigan, 2013; Wilson, 2015).

As a consequence therefore, if processing persuasive information online is motivated by goal-driven behaviour then individuals' attention is likely to focus on engaging in hypothesis-testing using relevant pre-existing schemas to systematically evaluate all the evidence (i.e. both central and heuristic) presented using propositional reasoning processes (Cooper, Blackman & Keller, 2015; Kruglanski & Thompson, 1999). This would then serve to guide information evaluation on the basis of protecting /promoting self-interest in terms of ensuring goal achievement with continued processing being suppressed once goal inconsistent information is encountered (Cooper et al., 2015; Darke & Chaiken, 2005). However, if individuals are motivated to process persuasive information on the premise of holding correct attitudes (as is suggested by dual-process models) then attention will be guided by the personal relevance of the attitudes being presented and is likely to be biased with primacy effects being observed (Petty & Cacioppo, 1986). Thus, when personal relevance is high the arguments presented will be attended and processed centrally/systematically, however, if personal relevance is low individuals will engage in more superficial and less effortful peripheral/heuristic processing (Chaiken, et al., 1989; Petty & Cacioppo, 1986).

Therefore, to examine these assumptions, our study aims to determine if the processing of persuasive online information for decision-making purposes varies as a function of context and so is motivated by goal-driven behaviour. In so doing we also aim to identify how the perceived costs or benefits advocated impact on information processing to clarify if online information processing follows UM or dual-process routes to persuasion. To do this we seek to identify that:

**H1:** There will be greater recall of central information for both primacy and recency arguments in situations where personal benefits are advocated as opposed to personal costs.

**H2:** The extent to which central information will be attended to (in terms of recalling premises and conclusions of arguments presented) will be affected by the perceived personal costs or benefits being advocated. Specifically, when personal benefits are perceived individuals will recall significantly more message information than when personal costs are implied.

**H3:** Attention to heuristic (peripheral) information will be significantly greater when personal costs, as opposed to personal benefits, are implied. Specifically, when personal costs are perceived recall of heuristic information will be greater for both:

- a. Descriptive information (i.e. not personally relevance) and
- b. Contextual information (i.e. relevant but consistent with existing schemas and not present in the persuasive arguments).

## 2. Materials and Method

### 2.1 Design

To assess recall of central information a 2 x 2 x 3 mixed factorial ANOVA was adopted. Context (i.e. **scenario**; podcast and exam) and argument position (primacy and recency) were the within-participants conditions (to minimise the impact of noise arising from individual differences in information processing); and the between-participants condition was online communication mode (IM, email, delayed email). **Online communication mode was included as a between-participants condition (e.g. Guadagno & Cialdini, 2002; Ng & Detenber, 2005 so as to identify if any processing differences were due to this factor.** Information recall was assessed using a direct recall measure and identifying

the number of information units recalled. A non-parametric approach was also used to assess attention to argument position and contextual/peripheral information.

Due to the presence of a within-participants condition, a distracter task in the form of a word-search was developed and was completed by participants after responding to the first scenario. This aim of this task was to prevent participants' responses to the second scenario being influenced by information presented in the first scenario (e.g. Tormala & Clarkson, 2007). The presentation of context was also counterbalanced to prevent order effects.

## 2.2. Participants

102 psychology undergraduates took part in return for course credit. This sample demographic is consistent with research typical of research in this field (e.g. DiBlasio & Milani, 2008; Guadagno & Cialdini, 2002). The final sample comprised 91 participants (31 males, 60 females; mean age: 20.64 years,  $SD = 5.90$ ) as 11 participants did not complete the recall measure for reasons unknown to the research team. A post-hoc power analysis using GPower 3.1 (Faul, Erdfelder, Lang & Buchner, 2007) identified that the final sample size would result in sufficient statistical power (power = .80) for a medium effect size ( $f = .25$ ). Participants were randomly assigned to conditions once informed consent was gained.

## 2.3. Materials

### *Pre-test for Personal Relevance*

As personal relevance is essential to persuasive information processing (e.g. Petty & Cacioppo, 1986), three months before this study was conducted, 143 psychology students (24 male, 119 female; mean age 21.36 years), who would be invited to take part in the main study, completed a 32-item attitude scale (Appendix 1) which was scored on a 5-point Likert scale anchored by "strongly agree" and "strongly disagree" and exhibited strong test-retest

reliability ( $r = .94$ ). The scale was developed from informal conversations with students about their experiences at this university and the resulting statements reflected student attitudes towards various social, learning, and political issues (e.g. “I don’t need to attend lectures to pass the course”, “University is a place for studying, not socialising”, “I don’t think it’s fair that students have to pay to park”). The responses identified that 92% were strongly in favour of attending lectures; whereas attitudes towards completing coursework (and working consistently throughout the academic year) were less concordant with 55% demonstrating negative or ambivalent attitudes.

These findings provided the foundation for ensuring that the scenarios presented, and used for assessing attention and recall, were both counter-attitudinal and personally-relevant. Thus, the first scenario concerned the implementation of podcasting in place of traditional lectures which would have a perceived beneficial impact upon students’ time by reducing physical attendance at lectures; whereas the second scenario concerned the implementation of a standardised examination system for accredited psychology degree courses which would necessitate a greater time commitment (and a potential personal cost) due to increased revision.

#### *Context (Scenario) Manipulations*

To assess the effects of context on the recall of information presented online, two scenarios were developed for the study providing context (Podcast: Appendix 2, Exam Appendix 3). The scenarios were designed to be personally relevant to the participants (providing motivation to process) and differed by virtue of the impact that the consequences of compliance with the proposal would have on an individual’s time. For each scenario the stimulus materials comprised a set of pre-scripted interactions between a student and a person in authority who adopted the position of advocating the changes (Appendix 4 and 5). This

method of presentation is typical in experimental persuasion research (Guadagno & Cialdini, 2002) as it acts as a control for recall purposes.

### *Presentation of Materials*

To identify possible effects associated with online communication mode, three online communication methods were used to present each conversation – IM, email and delayed email. As the interactions were pre-scripted, IM was simulated using PowerPoint presentations which were saved to a desktop PC. Each thread of the conversation appeared as if being typewritten by the participant pressing the “enter” key and was displayed alongside a time-stamp and a name tag as in a typical chat-room. For the email conditions, a dummy (Yahoo!) email account was set up and folders were created representing each of different email conditions. The normal and delayed email conditions were differentiated in the final emails with an additional email added in the delayed email condition merely stating that this was the end of the interaction. This created a short delay between reading the interactions and responding to the question asked – thereby mimicking the average recovery time from an email interrupt (Jackson, Dawson, & Wilson, 2001). The emails created were saved to the email account in separate folders for each condition.

### *2.3. Procedure*

Participants were informed that they would be taking part in a computer-based study and given an information pack containing all the necessary instructions and materials to locate and open the stimulus materials, to complete the tasks set, and the order in which the tasks (i.e. podcast-exam or exam-podcast) were to be completed. They then engaged in the conversations presented before responding to the recall task for that scenario.

To assess information recall the following instruction was given to participants after viewing each set of interactions: *Please write down **all** the information you can remember that was presented to you by the person advocating the proposal. Write it down in the order it comes to mind and try to be as close to the original wording as possible. If you can only remember the main idea but not the actual wording, just write that down. Use a new line for each piece of information recalled.* This question was similar to that used in other studies assessing information recall (e.g. Bodenhausen & Lichtenstein, 1987).

Once participants had given their responses, they spent 5 minutes completing the distracter task before moving on to the second situation which followed the same procedure as the first. Once participants had completed the recall task for the second situation they were thanked and debriefed.

### **3. Results**

#### *3.1. Data Preparation*

To assess for primacy and recency effects (i.e. attention to central information) the information presented within the interactions was broken down into information units which effectively represent a premise and a conclusion (Cooper, Blackman & Keller, 2015; McCrory, Henry, & Happe', 2007). For example, in the exam condition the following sentence comprised two information units: "as students will effectively be revising throughout the year" (one information unit) "the revision process for the main end of year exams will be a lot easier" (one information unit). The initial information unit for each argument was designated a "premise" (as it provided the initial assertion of a point being expressed) and the second a "conclusion" as it provided supporting evidence for the initial assertion (Cooper et al., 2015). A total of 20 information units were identified in each scenario with the first 10 classified as recall primacy and the second 10 classified as recall

recency and 1 point being awarded for each piece of information accurately recalled (McCrorry, et al., 2007; Petty, Tormala, Hawkins, & Wegener, 2001).

In addition to recalling the arguments presented participants also noted additional (peripheral) information which was not directly relevant to the proposals presented (i.e. descriptive and contextual cues). Six instances of descriptive information were included in both scenarios which provided supporting evidence for the proposals being argued but was not personally relevant (e.g. in the exam condition: “individual universities will be free to choose specific content”, “know exactly where the weaknesses lie”; in the podcast condition: “a flexible way of learning”, “standard of work improved”). Recall of this detail was noted and included in the data analysis as evidence of attention to peripheral message information. Finally, to account for information recalled extraneous to that presented within the conversations presented (i.e. contextual) four information categories were identified and participants’ recall recorded for analysis (Hunt, Bonfield, & Kernan, 1986): thematic intrusions (statements consistent with overall theme but not actually presented in the conversation), schematic intrusions (statements corresponding with statements in the scenario but not actually presented in the conversation), generalisations (combined actual arguments into more general assertions about the conversation), and additions (statements unrelated to the conversation presented).

The identification of primacy and recency effects along with the attention paid to descriptive and peripheral information provided the basis for the coding and analysis of the responses. To verify the analysis, two independent coders rated 12 participants’ responses (6 from each context) which accounted for approximately 13% of the sample. A strong, and acceptable, inter-rater agreement of 94% was found in the podcast scenario and 98% in the exam scenario.

### 3.2. Data Analysis

#### 3.2.1 Impact of Context on Recall of Central Information

The effect of context on argument recall (i.e. recall of central information) was examined using a 2 x 2 x 3 mixed design ANOVA. The within-participants conditions were context with the podcast proposition presenting perceived benefits in terms of time invested in attending lectures (i.e. reducing physical attendance); and the exam proposition presenting perceived negative consequences (i.e. requiring more time investment due to increased revision); and argument position (initial arguments/primacy vs. later arguments/recency). The between-participants condition was online communication (IM, email, and delayed email). A 2-way significant interaction between argument position and context was found (Figure 1),  $F_{(1,88)} = 10.82$ ,  $p = .001$ , partial  $\eta^2 = .11$ , indicating that recall of both primacy ( $M = 2.44$ ,  $SD = 1.77$ ) and recency ( $M = 3.51$ ,  $SD = 1.56$ ) central information was greater in the podcast condition than in the exam condition (primacy:  $M = 1.52$ ,  $SD = 1.15$ ; recency:  $M = 1.77$ ,  $SD = 1.29$ ). Further examination of these results identified significant main effects for both argument position ( $F_{(1,88)} = 17.85$ ,  $p < .001$ , partial  $\eta^2 = .17$ , and context,  $F_{(1,88)} = 99.09$ ,  $p < .001$ , partial  $\eta^2 = .53$ ). These findings identified significantly higher recall for the podcasting condition ( $M = 2.99$ ,  $SD = .14$ ) than the exam condition ( $M = 1.65$ ,  $SD = .09$ ), as well as significantly more recall for recency ( $M = 2.64$ ,  $SD = .12$ ) than primacy ( $M = 1.99$ ,  $SD = .13$ ) information.

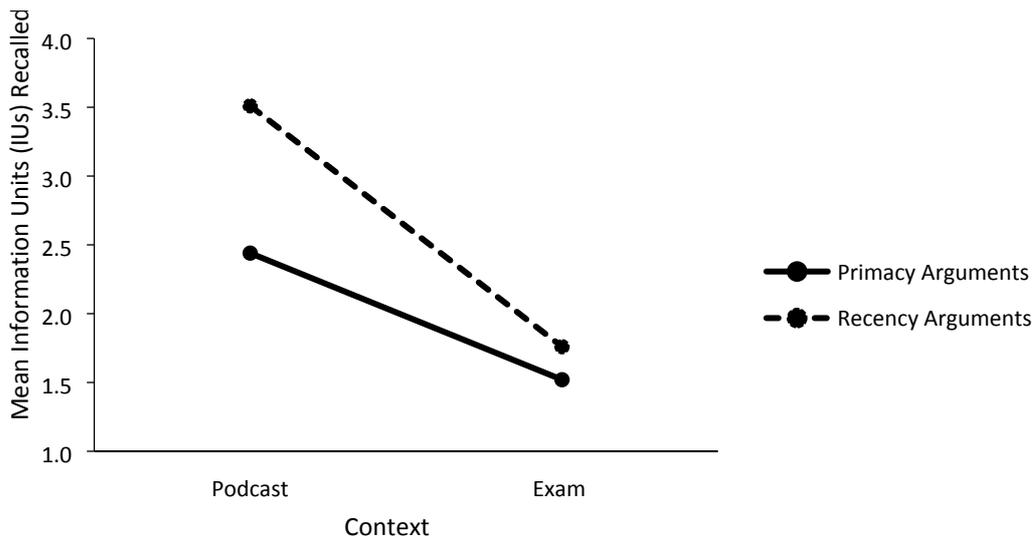


Figure 1. Significant interaction between context and argument position for information recalled

These effects were found to occur irrespective of the type of online communication mode being used as online communication mode failed to influence information recall ( $F_{(2,88)} = 2.30, p = .106$ ). Bonferroni's post hoc tests did not identify any significant differences in recall between IM, email, and delayed email and no interaction effects for communication mode were found. This therefore suggests that the online communication mode chosen by individuals does not influence computer-mediated information processing.

### 3.2.2 Extent of Evaluation in Response to Perceived Costs or Benefits

To further unpack how individuals evaluate persuasive information, recall of primacy (arguments 1-5) and recency (arguments 6-10) arguments were analysed based on recall of the component information units, each representing a premise and conclusion. A non-parametric approach was adopted as data were categorised and the number of information units was too small to provide meaningful results. Additionally, as previous literature suggests (e.g. Haugtvedt & Wegener, 1994) that information recall can exhibit either primacy or recency effects (depending on the manipulation) data distribution was unlikely to be

normal and so argument recall would be better measured by the median (Pereira, Afonso & Medeiros, 2015). Initial chi-square tests confirmed that online communication mode did not impact on recall as non-significant associations were found for both argument recall for primacy and recency effects ( $\chi^2_{(2)} = 2.57, p = .277$ ) and recall of major and minor premises ( $\chi^2_{(2)} = 1.14, p = .565$ ).

A Friedman test was then carried out to compare the extent of argument recall across the conditions and found, overall, a significant difference in information recall ( $\chi^2_{(7)} = 144.64, p < .001$ ). Dunn-Bonferroni post-hoc tests were then used to identify the nature of these differences (Table 1) and established that significantly more podcast arguments are recalled

(Table 1 about here)

throughout the presentation of information – with the exception of the initial information (primacy premise) where no differences were found between conditions (Figure 2). The effect size is, however, small (Kendall’s  $W = .232$ ). Nevertheless, these findings indicate that

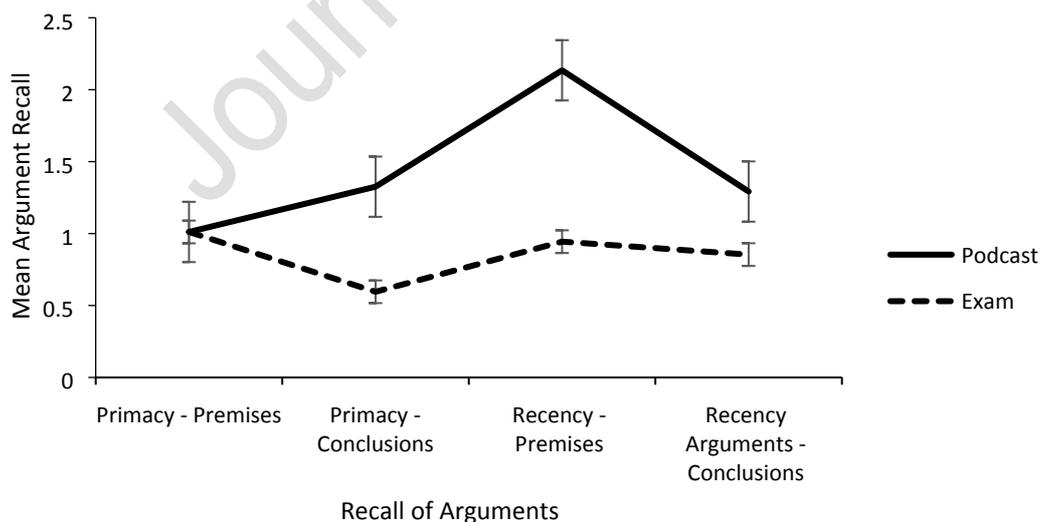


Figure 2. Pairwise comparisons showing the significant differences in the recall of arguments presented

individuals are more likely to pay attention to information in online interactions when personal benefits are advocated as opposed to costs. Additionally, they demonstrate that at the beginning of an interaction individuals exhibit a certain level of attention and it is only when the personal costs/benefits become apparent that a significant variation arises in information processing which peaks towards the end of an interaction.

### 3.2.3 Impact of Peripheral (Descriptive and Contextual) Information on Argument

#### Recall

To ascertain the nature of individuals' attention to descriptive information, a Wilcoxon test found that the recall of descriptive information was significantly higher in the exam ( $m = 0.77$ ,  $s.d. = 1.08$ ) condition than in the podcast ( $m = .52$ ,  $s.d. = .72$ ) condition,  $z = -2.13$ ,  $p = .033$ ,  $r = -.22$ . Further, a chi-square test conducted on the intrusions (i.e. errors and additions) in participants' recall and found a significant association between the intrusions and scenarios,  $\chi^2(3, n = 91) = 10.90$ ,  $p = .012$  (Table 2). These findings demonstrate that under conditions of high elaboration individuals attend to peripheral information and that

(Table 2 about here)

attention to such cues differs as a function of context. However planned comparison procedures, using single-degree-of-freedom contrasts along with a Bonferroni correction (Beasley & Schumacker, 1995), identified that this association was largely due to significant differences in schematic intrusions with significantly more intrusions being observed in the exam condition which has personal cost implications ( $p = .006$ ).

#### 4. Discussion

Our study has found support that, in personally relevant online persuasive interactions, the process of evaluating such information varies as a function of context thereby suggesting that goal-driven motivations drive attention to information. Indeed, we also identified that individuals are more likely to recall information, and continue to process information, when the proposal advocated is commensurate with goals and that this behaviour is attenuated when personal costs are perceived. Finally, we found that, in online persuasive interactions, individuals not only attend to the arguments but also use heuristic information in the evaluation process. However, whilst this information is attended to in both cost and benefit contexts it is only descriptive (not personally relevant) information and schematic (i.e. schema-driven information not included in the arguments) intrusions which attract significantly more attention when personal costs are perceived as opposed to benefits.

Thus, we have found evidence that individuals engage in goal-directed information-seeking in online interactions as it appears that self-interest motivations moderate the attention to context-relevant information (Darke & Chaiken, 2005). Indeed, it appears that individuals' attention is prevention-focused in the exam condition as goal contradictory arguments (i.e. personal costs are advocated) are ignored. Conversely, when personal benefits are implied by the context (as in the podcast condition) a promotion-focus is adopted and individuals are willing to maintain processing effort throughout the interaction (Lee & Aaker, 2004). As such, in support of Wilson and Lu (2008), online behaviour is motivated by goal attainment and, to achieve this, the context acts as a prime from which individuals can activate relevant schemas which the individual uses to aid the appraisal and evaluation of the costs and benefits of a proposal (Darke & Chaiken, 2005; Walther, et al., 2015).

Our finding with regards the use of peripheral cues provides support for Walther et al. (2010) who suggest that, despite the lack of visual and vocal cues, in online interactions

individuals do actively seek out substitute cues as an aid to information processing. Indeed, our study shows that the presentation of persuasive arguments online triggers the activation of relevant schemata which are attended to and used to guide the evaluation process (Walther et al., 2015). Such behaviour is evidenced from participants' recall as, despite being directed to recall the arguments presented, they also recalled peripheral information including descriptive (non-personally relevant) information, schematic and thematic intrusions which contained context relevant information that had not been presented in the arguments.

Additionally, participants' recall of information differed as a function of context with significantly more schematic intrusions being made in the exam condition. This suggests that, when personal costs are advocated, processing of the arguments presented is attenuated in favour of attending to heuristic information which is easy to process and so requires less cognitive effort – specifically schemas already held in relation to goals and expectancies for that context (Metzger & Flanigan, 2013; Wilson, 2015; Walther et al., 2015).

Additionally, we failed to find any biasing effects - despite analysing information recall in terms of overall primacy effects (i.e. the set of interactions as a whole) and on a propositional reasoning basis (i.e. by examining attention to both premises and conclusions). Should we have found this, it would have indicated that motivation to process arguments was attitude-specific in accordance with dual-process persuasion models. Instead, the analysis demonstrated that, when processing persuasive information, individuals selectively attend to information and focus on that they, as individuals, perceive as salient – regardless of its position within a set of given interactions. This finding, in conjunction with the finding that individuals do attend to peripheral information, implies that when processing persuasive information online, individuals utilise all salient information and assess it for its evidentiary relevance to facilitate goal achievement (Sherman, 2014). Consequently, Kruglanski and Thompson's (1999) UM provides a more parsimonious account of motivation to process

persuasive information online than either the ELM (Petty & Cacioppo, 1986) or HSM (Chaiken, et al., 1989) as we have found individuals to be goal-oriented as opposed to attitude-focused.

Our findings find support from San José-Cabezudo et al. (2009) who found that in the online persuasion process central and peripheral processes act together in the online persuasion process. Further, these authors also found that individuals attend to cues in accordance with their goals and that contextual cues, when they match an individual's goals, can increase motivation to attend to the information presented. These assumptions were also evidenced in our research as we found that the extent of processing varies as a function of perceived costs and benefits, thereby implying goal-directed behaviour based on self-interest motivations and supporting the conclusions drawn by both Wilson & Lu (2008) and Wilson et al. (2015). However, our findings challenge those which have previously explained online persuasion from a dual-process perspective. For example, DiBlasio and Milani (2008) explained their findings in terms of a reduced likelihood of attitude change when contra-attitudinal information was presented. This assumption could be re-interpreted as evidence for goal-driven behaviour as the counter-attitudinal information could have resulted in individuals adopting a prevention-focus approach to message evaluation to ensure personal costs were avoided (Lee & Aker, 2004).

Similarly, Guadagno and Cialdini (2002, 2007) identified gender effects in persuasion suggesting that females demonstrate increased attention to the visual, vocal and social cues (to facilitate a sense of oneness) present in FtF interactions as compared to males. As a consequence, therefore, these authors found that females are less likely to be persuaded via email than males – a finding which, according to Guadagno and Cialdini (2005) has been replicated by several researchers. However, as our research demonstrates that individuals evaluating online persuasive arguments do attend to peripheral cues, it is possible that these

cues could be conveyed via text (e.g. by varying language strength and affective cues and including identity information) and so enhance female persuasion (Shen & Bigsby, 2012; Tanis & Postmes, 2008).

Whilst our study did not aim to examine the impact of online communication mode on message evaluation, to ensure the findings were applicable across online communication modalities, these effects were ascertained. Despite the possibility of synchronicity issues due to the differing response latencies associated with email and IM (Kalman et al., 2011), no differences were found for information processing and attention to cues. Although this finding facilitates the assumptions made in this study, it does contradict findings from research on online impression formation (e.g. Ng & Detenber, 2005; Walther et al., 2010) which suggests that deeper, more thorough, processing should occur in email conditions which negatively impacts on persuasion. Consequently, the lack of communication effect should facilitate the comparison of research which has focused solely on a single online communication modality (e.g. DiBlasio & Milani, 2008; Gaudagno and Cialdini, 2002). However, research by Li, Chatterjee and Turetken (2017) suggests that these apparent inconsistencies in findings could be explained by considering the notion that the extent of persuasion varies as a function of online communication mode and the persuasive strategy (e.g. use of affect in praising or rewarding) adopted. This could then imply that different combinations of message presentation activate different metacognitive processes which would be indicative of online persuasion processes being as complex as those which occur in FtF interactions (Petty & Briñol, 2008). As such, further investigation is warranted to examine the impact that the use of paralinguistic cues in message framing has on online persuasion in terms of attention and goal-driven motivations.

#### 4.1 *Limitations*

Whilst we did find that individuals' attention to information differed as a function of context (implying that motivation was achieved and was expressed as goal-oriented information-seeking), recall was limited and only a small effect size observed. This could be due to participants not being motivated to process information being limited. Alternatively, this finding could provide further evidence of hypothesis-testing in that individuals seek to conserve processing effort once decisions had been made due to goal-driven expectancies being confirmed or dis-confirmed (Metzger & Flanigan, 2013).

Additionally, in order to facilitate comparison between conditions and maintain experimental control, the interactions presented to participants did not allow for participants to actively participate in the discussion. The main advantage of adopting this methodology is that it allowed us to identify what information is attended to and how persuasion occurs online without a potential confound arising from independent and personal responses. Whilst this procedure is often used in research of this nature (e.g. Ng & Detenber, 2005; Li et al., 2017), it would be useful to confirm these findings by allowing participants to adopt an active, and more realistic, role in the proceedings.

#### 4.2 *Conclusions*

In sum, therefore, our findings demonstrate that individuals process persuasive information online in accordance with their goals, as this provides motivation to attend, and not by the holding of correct attitudes. They also show that under conditions of personal relevance individuals do attend to peripheral information and that this type of information becomes even more salient under conditions where goal achievement is threatened by a persuasive proposal and so attention to arguments is attenuated. Together, this suggests that in online interpersonal persuasion, information evaluation processes are more in accordance

with Kruglanski and Thompson's (1999) UM principles as opposed to ELM (Petty & Cacioppo, 1986) or HSM (Chaiken et al., 1989) principles. However, the persuasion process is complex with the underlying mechanisms driving information processing varying as a function of the situation and this can impact on strength of attitude change (Petty & Briñol, 2008).

Nonetheless, this research has implications for internet users, such as politicians, who aim to change opinions as it begins to unpick the cognitive mechanisms underlying information processing in online persuasion. With the decline in election engagement being, in some part, attributed to apathy amongst the young (aged 18 – 24), internet campaigns are increasingly being used by politicians to encourage political interest as they are interactive and easily accessible (McAllister, 2016; Sundar, Kalyanaraman & Brown, 2003). The consequence of this shift in electioneering is that, the increased political knowledge gained from internet sources results in greater political participation (through sharing information via online social networks) as well as an increased intention to vote – especially amongst the educated internet generation (Diehl, Weeks & Zúñiga, 2015; McAllister, 2016). Thus, our findings could be beneficial to campaigners aiming to encourage voting behaviour as they use an educated, internet-savvy population and demonstrate that personal goals need to be appealed to when framing messages in order to facilitate the processing of persuasive information.

As such, future research could focus on online message framing strategies (e.g. acknowledge both sides of an argument so as to create/maintain interest and effortful processing) in an attempt to present persuasive political information in way so as to be viewed as non-threatening to the individual's goal-driven orientation. Additionally, as individuals engage in cue substitution in online interactions it would be beneficial, from a political persuasion perspective, to examine the impact of language cues (such as language

power and affective cues) when presenting political messages using different forms of CMC. By increasing our understanding as to how these cues affect the cognitive processing of persuasive information, we can begin to develop strategies to present political messages in a way that alleviates perceived threat to individual goal achievement (Li, et al., 2017; Shen & Bigsby, 2012).

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Appendix 1

Attitude Survey

Please read each statement carefully and circle the response which most represents **YOUR** opinion. Remember: there are **no** right or wrong answers.

	Strongly Disagree	Disagree	Neither Agree/ Disagree	Agree	Strongly Agree
1. I am motivated to do my coursework	1	2	3	4	5
2. I enjoy using the university's sports facilities	1	2	3	4	5
3. Local residents do not think that all students are noisy and drunk	1	2	3	4	5
4. I want to attend lectures so that I can pass the modules I am studying	1	2	3	4	5
5. By joining a university club/society I will meet people with similar interests	1	2	3	4	5
6. I feel that plagiarism checks are unfair	1	2	3	4	5
7. I don't think that there is a problem with car parking at university	1	2	3	4	5
8. University is a place for studying, not socialising	1	2	3	4	5
9. I don't think tutorials are useful	1	2	3	4	5
10. I don't need to attend lectures to pass the course	1	2	3	4	5
11. Being at university is a good opportunity to make new friends	1	2	3	4	5
12. It doesn't matter to me if I don't hand my coursework in	1	2	3	4	5
13. I believe that car parking at university should be free	1	2	3	4	5
14. I don't like having to do assignments	1	2	3	4	5
15. Making friendships at university is not important to me	1	2	3	4	5
16. Preparing for seminars/tutorials is a waste of my time	1	2	3	4	5
17. The lecturers will not be supportive if I have a problem	1	2	3	4	5
18. I think it's fair that students have to pay to park	1	2	3	4	5
19. The student union is encouraging binge drinking by selling cheap alcohol	1	2	3	4	5

		Strongly Disagree	Disagree	Neither Agree/Disagree	Agree	Strongly Agree
20.	I am happy to submit my work for plagiarism checks	1	2	3	4	5
21.	It is important that I hand my assignments in on time	1	2	3	4	5
22.	Attending lectures is not as important as socialising	1	2	3	4	5
23.	The student union is not a good place to go for a night out	1	2	3	4	5
24.	The size of the car park is not adequate for the university's needs	1	2	3	4	5
25.	I am not interested in taking part in any sporting activities on campus	1	2	3	4	5
26.	I believe it is important to prepare for seminars/tutorials	1	2	3	4	5
27.	A good reason for going to the student union is because the drinks are cheap	1	2	3	4	5
28.	If I have a problem I know I can approach a lecturer/course tutor	1	2	3	4	5
29.	Local residents are not tolerant or supportive of students	1	2	3	4	5
30.	I like to go to the student union with my friends	1	2	3	4	5
31.	I believe tutorials help me understand the information given in lectures	1	2	3	4	5
32.	I don't want to be a member of any university clubs as I won't fit in	1	2	3	4	5

## Appendix 2

### **Podcast Scenario**

#### **Podcasting**

Podcasting is an amalgamation of the words *iPod* and *broadcasting* and describes the collection of technologies used for distributing audio and video files over the internet. These can be listened to at the computer or downloaded to an MP3 player. Despite the name, podcasts can be downloaded to any MP3 player, not just iPods.

There are three kinds of podcasts – audio, enhanced, and video. Audio podcasts are usually an MP3 file and are the most common types of podcasts. Enhanced podcasts can have images to go along with the audio and may also have chapter markers, making it easier to skip to different portions of an episode. However, enhanced podcasts are not supported by all devices. Video podcasts are movies, complete with sound but will only play on iPods and iPads.

#### **The Situation**

You are a second year psychology student at LearnSmart University and you are also the student course rep for your year group. Your role, as course rep, is to look after the other students' best interests, keep them informed of any changes to their learning environment, offer advice, and ensure the students' views and opinions are heard.

You have just found out that the university is considering replacing the traditional lecture system with audio podcasting using iTunes as the podcast directory. It is thought that the use of podcasting would allow students to listen to the lectures from home or from wherever they chose. According to the information you have, the university feels that this will cut energy costs quite considerably as lecture theatres will not have to be heated.

You are very concerned about this as you feel that the students' education is likely to suffer if this proposal is given the go ahead. Your reasons for this belief are that:

1. Students are unlikely to make the time to listen to the podcasts on a regular basis in place of going to the actual lectures.
2. The proposal assumes all students have iPods, computers and access to high speed broadband which is necessary to download the files.
3. Students will have difficulty in focusing on lecture content if the recording is poor, or if the lecturer speaks in monotone, or has a strong accent/dialect, etc.
4. Students will become de-motivated as they are often motivated by the non-verbal cues a lecturer conveys through gestures.
5. Education for students with hearing impairments may suffer.
6. Students will miss out on part of the university experience and they may as well be studying a distance learning course instead.

#### **Course of Action**

You need to find out some more information, so you send an email to one of the professors from your Faculty requesting to see the asking for his views.

You need to speak to someone about this and find out some more information. The PSGB is holding an online discussion forum with the student union representative and so you decide to join the chat for an explanation as to how this proposal would be beneficial.

### Appendix 3

#### **Exam Scenario**

##### **The Situation**

The exam system for all accredited Psychological Society of Great Britain (PSGB) degree courses is to be standardised with immediate effect. Currently universities award degrees using varied assessment techniques – exam grades only, coursework grades only, or a mix of coursework and exam grades.

The PSGB believe that the wide variety of formal assessment methods between institutions is resulting in degree inequality and that some degrees are being seen as more “valuable” than others (i.e. prospective graduate employers prefer to employ graduates who have been assessed largely through examination than those who have been assessed via coursework).

To address this issue, the society is proposing that all accredited psychology degrees should be assessed in the same manner. It is expected the mark for each module studied will comprise of 40% coursework and 60% examination, with 4 exam periods each year. The main examination period will be held at the end of the academic year and there will be 3 interim “phased assessment” tests during the year – 1 before reading week in November, 1 at Christmas and 1 before reading week in February.

##### **Your Reaction**

You are a psychology student whose will be affected by this proposal. The student union does not see any real benefit of this change and believes that

1. Exams only test memory recall and that coursework is more valuable as it demonstrates that a student understands what has been taught
2. Exams only test exam technique and do not demonstrate other important study skills a student has acquired (essay and report writing, presentation skills, etc)
3. Students will miss important lectures just before the exams as you will have to revise

4. Coursework will suffer as there will be less time to complete it
5. Students will become more stressed due to increased pressure from continual assessment
6. Some students will find it difficult to cope and will drop out leaving the PSGB with less graduate members and employers without employees

### **Course of Action**

You need to speak to someone about this and find out some more information. The PSGB is holding an online discussion forum with the student union representative and so you decide to join the chat for an explanation as to how this proposal would be beneficial.

#### Appendix 4

##### Podcast Interaction: IM example

Hey, can you tell me a little bit about podcasting lectures?

What will happen is that students will subscribe to the podcasts when they enrol. This will ensure that the students will receive the latest files to their computers as and when they become available.

Right...

Well, this means students always receive the materials they need and do not have to remember to collect them.

Ok

The students will then be able to play the podcast on their computer or, even better, they can even download the material onto their iPods. Just think, they have the facility to learn anywhere - and anytime! In fact they will be able to learn wherever it suits them! What a wonderful opportunity!

Yes, I can see it could be

Well, the students will be in control of their learning and the idea is that they will listen and learn from the lecture, at their own pace, before attending a seminar which will serve to reinforce the lecture - as it always has done.

Ok

But the great thing about a lecture which has been podcast is that students can go over the lecture as many times as they wish and so don't miss any details!

Oh yes

In fact, podcasting lectures could be really beneficial for foreign students and those with learning difficulties as they would be able to control the lecture so that it moves at their

pace and so would learn more as they are able to take more time in processing the information!

Possibly...

Anyway, just think, no more missed lectures and having to catch up! It really is a flexible way of learning and could be beneficial to students because it is so adaptable. In fact, Duke University in America did a successful podcast trial and found that students were more engaged and interested in seminar discussions. They also believe that the standard of students' work improved too.

I hope this helps.

Yes, I think so, thanks

Journal Pre-proof

## Appendix 5

### Exam Interaction: Email Example

Hi,

Could you tell me a little more about the proposal?

Cheers

Hi,

Ok, well the proposal is that if universities want their psychology degree course validated by the Society then they will be expected to adopt this new assessment system of 40% coursework and 60% exams.

Cheers

Hi,

Right...so how will this be done?

Cheers

Hi,

Well, the PSGB will give universities an outline as to what is to be assessed at each test, as this will ensure that all psychology students will be assessed to the same level. However, individual universities will be free to choose the specific content and frame the questions as they so choose.

Cheers

Hi,

Ok, so how will this work?

Cheers

Hi,

In the main examination period, at the end of the academic year, the exams will be the in the traditional format and consist of a choice of essay questions. The “phased assessment” tests, however, will consist of between 5 and 10 questions requiring no more than a paragraph answer. The idea is that this process will test that students have understood the basic issues and concepts they have recently been introduced to.

Cheers,

Hi,

So what are the advantages of introducing this new assessment system?

Cheers,

Hi,

Well, there are huge advantages of adopting this assessment system! For instance, there will be improvements in students’ learning as they will be more focussed in their approach to studying.

Cheers

Hi,

Well, I’m not so sure...

Cheers

Hi,

Just think, “phased assessment” tests will allow students to know exactly where their weaknesses lie as they will be given immediate feedback and so they can target their revision for the main end of year exams more effectively. Of course, as students will effectively be revising throughout the year the revision process for the main end of year exams will be a lot easier for them.

Cheers

Hi,

I suppose so. But will it work?

Cheers

I can tell you that this system is already seen to be an effective way of learning and ensuring that students are well qualified when they graduate. I also know that many medical schools have similar assessment methods as they feel it ensures students become more competent and confident in their abilities.

Cheers

Hi,

Oh yes?!

Cheers

Hi,

I am sure that by adopting this system that we will end up with a more professional graduate!

I hope this helps clarify things,

Cheers,

Hi,

Yes, it does help.

Thanks

**Tables**

Table 1

*Significant Dunn-Bonferroni post-hoc tests for differences in number of arguments recalled*

Argument Recall		$\chi^2$	p
Exam Primacy Premise	– Podcast Recency Premises	2.50	< .001
Exam Primacy Conclusions	– Podcast Primacy Conclusions	1.81	< .001
Exam Primacy Conclusions	– Podcast Recency Conclusions	1.82	< .001
Exam Primacy Conclusions	– Podcast Primacy Premises	-3.58	< .001
Exam Recency Premise	– Podcast Recency Premises	2.58	< .001
Exam Recency Conclusions	– Podcast Recency Premises	-2.90	< .001
Podcast Primacy Premise	– Podcast Recency Premises	-2.70	< .001
Podcast Primacy Conclusions	– Podcast Recency Premises	-1.78	< .001
Podcast Recency Conclusions	– Podcast Recency Premises	-1.77	< .001

Table 2

*Errors and additions in recall across situations*

Situation	Thematic Intrusions		Schematic Intrusions		Generalisations		Additions	
	n	Adj. Resid.	n	Adj. Resid.	n	Adj. Resid.	n	Adj. Resid.
Podcast	44	1.4	38	-2.7	60	-.6	50	2.2
Exam	44	-1.4	78	2.7	86	.6	44	-2.2

*Note.* p < .05

Highlights:

- Online persuasive information processing is motivated by goal-driven behaviour
- Attention to message content occurs when goal attainment evidence is conveyed
- Contextual cues activate goal-driven motivations for online information processing
- Personal benefits implied by contextual cues increase attention to message content
- Personal costs implied by situational cues attenuate persuasive message processing

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