

# **Multiple media use: individuals' preferences, drivers and motivations.**

**HELEN R. ROBINSON**

This thesis is being submitted in partial fulfilment  
of the requirements of Kingston University for the  
award of PhD.

November 2020

## **Abstract:**

This thesis examines multiple media use - the act of consuming more than one media at a time, otherwise termed media multitasking. Ongoing technological developments enable multiple media use through a variety of combinations of online and offline media, for example: television, social media and text messaging. The overall aim of the study is to address the emergent, limited and descriptive status of existing research in the domain of multiple media use. Accordingly, the principal purpose of the study is to pursue explanations for individuals' multiple media use through a planned sequence of five papers.

Following the review of literature in Paper 1, revealing the emerging nature of extant research, a series of empirical studies are conducted and documented, each informed by the preceding findings. In Paper 2, an exploration of the scope of individuals' preference for multiple media use (or polychronicity) reveals eight dimensions of preference. In turn, these dimensions inform the development and testing of a multidimensional scale to measure polychronicity, the preference for multiple media use, in Paper 3. The resulting scale is then used in Paper 4 to investigate the effects of the dimensions of preference on multiple media use, to determine the relationship between preference and behaviour. On establishing this relationship, underlying motivations in the relationships between preferences and multiple media use are introduced in Paper 5, represented by regulatory mode theory.

Collectively, the findings represent a substantive contribution to knowledge in the emerging domain of multiple media use. In brief, Paper 1 identifies the relevance of the concepts of polychronicity and multitasking, detailing precise future research directions. Offering the first insight into preference for multiple media use, Paper 2 advances our understanding of the breadth of individuals' preference. The prime contribution of Paper 3 is a new multidimensional scale to measure polychronicity, the preference for multiple media use (the P-MMU). In Paper 4, the differential effects of the dimensions of preference on multiple media use are discovered, leading to the formation of three distinct user segments and a unique multiple media user typology (the MMU-T). Finally, Paper 5 offers a first known insight into the role of motivation in the relationship between preference and the act of multiple media use, providing evidence of the moderating effects of regulatory mode.

For marketing communications, advertising and media practitioners, the findings enhance the multi-media planning process by providing: a rich supplementary information source, a new measurement scale (P-MMU), a unique multiple media user typology (MMU-T) and an in-depth understanding of the motivation for multiple media use.

**Keywords:** multiple media use, polychronicity, media multitasking, regulatory mode theory

**Acknowledgements:**

The thesis is dedicated to the memory of my Father, who calmly listened and monitored the progress of PhD paper submissions over recent years. Sadly, he is not with me as I reach the final stages of this journey and will never know the outcome.

My thanks also go to my family and friends - in particular, my children Sophie and Dan, who unwittingly provided the initial inspiration for my research and have offered continuing support in a variety of guises throughout the 'PhD years'.

Lastly, for his enduring guidance, patience and encouragement, my sincere thanks go to Professor Stavros Kalafatis, my co-author and Director of Studies.

## Contents:

<b>PART A: Introduction, background and research programme .....</b>	<b>6</b>
A1: Multiple media use .....	6
A1.1 Foreword .....	6
A1.2 The behavioural phenomenon of multiple media use .....	6
A1.3 The research domain of multiple media use .....	7
A1.4 Research aim .....	9
A2: The planned programme of research .....	11
A2.1 Foreword .....	11
A2.2 Research objectives, coherence of papers and methodology .....	11
A2.3 Structure of thesis .....	18
<b>PART B: Empirical research Papers 1 - 5 .....</b>	<b>19</b>
B1 Paper 1: .....	20
B1.1 Paper 1 Abstract .....	20
B1.2 Paper 1 .....	22
B2 Paper 2: .....	23
B2.1 Paper 2 Abstract .....	23
B2.2 Paper 2 .....	25
B3 Paper 3: .....	26
B3.1 Paper 3 Abstract .....	26
B3.2 Paper 3 .....	28
B4 Paper 4: .....	29
B4.1 Paper 4 Abstract .....	29
B4.2 Paper 4 .....	31
B5 Paper 5: .....	32
B5.1 Paper 5 Abstract .....	32
B5.2 Paper 5 .....	34
<b>PART C: Theoretical contributions, managerial implications, future research and limitations .....</b>	<b>65</b>
C1 Foreword .....	65
C2 Theoretical contributions of overall programme of research .....	65
C3 Implications for marketing communications practitioners .....	69
C4 Research limitations and future research .....	72

<b>PART D: References for the overarching document .....</b>	<b>75</b>
<b>PART E: Technical appendices Papers 1 - 5 .....</b>	<b>82</b>
E1 Technical appendix Paper 1 .....	83
E2 Technical appendix Paper 2 .....	85
E3 Technical appendix Paper 3 .....	98
E4 Technical appendix Paper 4 .....	119
E5 Technical appendix Paper 5 .....	147

## **PART A: Introduction, background and research programme**

### **A1: Multiple media use**

#### **A1.1 Foreword**

The chapter opens with an introduction to the behavioural phenomenon of multiple media use. As a background to the study, highlights of the review of extant literature in the domain of multiple media use are discussed, revealing a noteworthy gap in research. Addressing the research gap, a statement of the overall research aim of the study is presented.

#### **A1.2 The behavioural phenomenon of multiple media use**

The inspiration for researching this topic originates from observing the behaviour of my daughter and son, whose media use involves skipping between different activities across a variety of media. Examples of their multiple media use include checking social media alerts while watching a television programme or browsing the internet while attending to incoming texts and listening to music on the radio. For many years, my Father also read his newspaper while watching television, so this is not an entirely new phenomenon. Nevertheless, the rapid technological developments of recent years continue to stimulate media multitasking.

In a multiple media use scenario, individuals have access to a broad range of media alternatives. Online and offline media options are available through multiple devices and platforms, in a variety of settings, offering individual media consumers a wide range of choice when deciding which media to watch, read or listen to. Online media options include a multitude of websites, encompassing an extensive range of themes: for example, sport, fashion, food and news. Social media websites, with intrinsic user generated content such as Facebook, Instagram, YouTube and web blogs, allow yet more choice for individual media users. In addition, offline (or traditional) media alternatives are available in the form of television, press, radio and cinema. Added variety is also afforded through a range of on-demand media services, such as those offered by the television providers Sky and Virgin. In

this fragmented media environment, multiple media use is now considered commonplace. Hence, the availability of a wide range of media channels, coupled with ability to control media consumption through multiple media devices (e.g. smartphones, laptops and television screens), enable countless combinations of multiple media use by individuals. In contemplating possible reasons for such behaviour, questions arise concerning the preferences of media consumers to multitask with media. Furthermore, in seeking explanations for multiple media use, it is important to investigate the drivers and underpinning motivations of individuals who choose to multitask with media. The point of departure for the study therefore stems from a desire to understand the intricacies of this intriguing behavioural phenomenon.

As portrayed, multiple media use denotes the act of an individual consuming more than one medium at a time. The generic term 'multitasking' is acknowledged in the literature as the act of switching between different tasks within a (short) time period (Delbridge, 2000; Oswald, Hambrick and Jones, 2007). Correspondingly, multiple media use represents a specific case of multitasking (Rosen, Carrier and Cheever, 2013). Accordingly, in this thesis, multiple media use is conceptualised as a behavioural phenomenon, 'engaging in multiple media tasks in the same general time period by engaging in frequent switches between individual media tasks', thus adapting the generic multitasking definition by Delbridge (2000, p.1) for the media context of the study.

### **A1.3 The research domain of multiple media use**

To establish the extent of previous empirical work, a review of the literature on the topic of multiple media use is conducted, revealing a potential gap in research (*c.f.* Paper 1, Chapter B1 for the full review). The following precis of Paper 1 uncovers several themes in the specific topic area of multiple media use.

The generational composition of multiple media users, examined by Carrier *et al.* (2009), reveals the 'Net Generation' (born between 1980 - present) as the most prevalent, followed by Generation X (1965 - 1979) and the 'Baby Boomers' (born between 1946 - 1964). These findings, supported by Foehr (2006) and Pilotta and Shultz (2005), confirm the youngest of these groups as the principal multiple media users. The prevalence of multiple media use among young consumers is also confirmed by Bardhi *et al.* (2010, p.328), who find that 'media multitasking is the way young consumers interact with commercial media'.

Analysis of industry data (SIMM - BIGresearch) by Pilotta and Shultz (2005) reveals that between 40-65% of total media consumption time is spent media multitasking, with heavy media users identified as the most likely multitaskers (Pilotta *et al.*, 2004; Foehr, 2006). Countless multiple media combinations are identified (Pilotta and Shultz, 2005; Pilotta *et al.*, 2004), with TV and Internet and TV and newspapers determined as the most popular combinations. Empirical work also indicates that during media multitasking, more attention is given to one medium than the other, suggesting a foreground and background medium (Pilotta and Shultz, 2005). Speed of switching between media in a multitasking situation is also examined; in a computer multitasking setting, Brasel and Gips (2011) identify the speed of switching between two media as fast (at an average of four switches per minute). Such findings imply distractions in individuals' attention to media (when consumed in a multiple media use scenario), with inherent implications for their engagement in media content. The antecedents of media multitasking are examined, leading to the identification of audience and media features, such as age and weight of media usage (Bardhi *et al.*, 2010; Carrier *et al.*, 2009; Foehr, 2006; Jeong and Fishbein, 2007). However, there is a lack of knowledge regarding why multiple media use occurs. Consequences of multiple media use (for example, effects on audience attention) have also been investigated to a limited extent (Bardhi *et al.*, 2010; Ophir, Nass and Wagner, 2009; Voorveldt, 2011; Wang and Tchernev, 2012; Srivastava, 2013), revealing positive and negative outcomes of multiple media use. Hence, extant studies confirm the occurrence of multiple media use, determine the demographics of users, identify an assortment of media combinations and specify the speed of switching between media.

Overall, the appraisal of existing literature on the topic of multiple media use reveals a paucity of empirical work, uncovering a dearth of studies in the domain. Extant studies are primarily descriptive and empirical work is also constrained by two-way analyses of media multitasking, as opposed to larger multiple media combinations which more accurately reflect reality. Apart from the exploratory study by Bardhi *et al.* (2010), the literature lacks theoretical underpinning and is silent with respect to the reasons for multiple media use.

In seeking theoretical explanations for multiple media use, consumer behaviour theory provides an overarching framework, indicating that preference precedes behaviour (Lavidge and Steiner, 1961; Lee *et al.*, 2009). Hence, the first step towards understanding why individuals multitask with media requires the identification of the range of preferences of individuals who choose to multitask with media. Thereafter, the drivers of multiple



media use may be determined. Pursuing this line of inquiry, the concepts of polychronicity and multitasking are acknowledged as relevant to the study of multiple media use. Several definitions of polychronicity are found in the literature, more recently emphasising the preference for doing more than one thing at a time (Bluedorn, Kaufman and Lane, 1992; Palmer and Schoorman, 1999; Konig and Waller, 2010; Poposki and Oswald, 2010). Multitasking is also recognised in the literature (Delbridge, 2000; Oswald *et al.*, 2007) (*c.f.* A1.2). Furthermore, the proposal by Konig and Waller (2010), that ‘the term polychronicity should only be used to describe the preference for doing several things at a time’ (p.175) and that multitasking should be retained for the behavioural aspect, is accepted for the study. Thus, polychronicity is regarded as the preference to behave and multitasking as the behaviour itself. The literature pertaining to the concept of polychronicity reveals several scales purporting to measure polychronicity. However, none is considered acceptable for its measurement in the context of multiple media use, either being too general or rooted in the organisational (rather than consumer) environment.

In summary, the review of literature in Paper 1 concludes that empirical research on the topic of multiple media use is extremely limited. The few studies identified are conducted relatively recently, indicating that this is an emerging research domain in the initial stages of growth. The majority of existing research is descriptive, making no attempt to explain the underlying reasons for this behavioural phenomenon. Jointly, the emergent character of the domain, combined with the descriptive nature of previous empirical work in the area of multiple media use, reveal a notable gap in research. Above all, the discovery that extant empirical studies lack theoretical underpinning and do not attempt to explain the underlying foundations of the behavioural phenomenon of multiple media use, offer an opportunity to advance knowledge in this domain. In seeking to establish theoretical foundations for the study of multiple media use, consumer behaviour theory provides evidence that preference leads to behaviour. Consistently, the concepts of polychronicity and multitasking are identified as relevant and are pursued. The recommendations from Paper 1 form the basis for empirical work in subsequent papers.

#### **A1.4 Research aim:**

The principal focus of this study is to address the limited, emergent and descriptive status of existing empirical work in the domain of multiple media use, forming the research gap highlighted in section A1.3 and review of literature in Paper 1. Consistently, the overriding purpose of this empirical investigation is to pursue explanations for individuals’ multiple

media use. The initial step is to explore the scope of individuals' preference for multiple media use. Subsequently, the uncovered dimensions of preference inform the development and testing of a new multidimensional scale to measure polychronicity, the preference for multiple media use. Using the new scale, the next logical step is to investigate the effects of the dimensions of preference on multiple media use, to ascertain the relationships between preference and behaviour. Once this relationship is established, it is possible to investigate underlying motivations in the relationships between preference and multiple media use. Hence, the aim of the study is to examine the underlying preferences, key drivers and underpinning motivations of individuals' multiple media use.

To address the overall aim of the study, an 'alternative format thesis' (Faculty Research Degrees Committee (FRDC), 2013) is undertaken, following approval from the FRDC in 2014. Accordingly, a planned programme of research is documented in the thesis. Papers 1, 2, 3 and 4 are published in respected peer reviewed marketing journals: *The Marketing Review*; *Qualitative Market Research: An International Journal* (ABS 2\*); the *Journal of Marketing Management* (ABS 2\*) and the *Journal of Advertising Research* (ABS 3\*) respectively and Paper 5 has recently been submitted to the *European Journal of Marketing* (ABS 3\*). The author of the thesis is the lead author in all five journal papers, accompanied by the Director of Studies in papers 3 and 4 (with individual contributions detailed in Part B). Hence, the authorship of papers presented for the thesis meets the regulations of the doctoral programme (FRDC, 2013; Graduate Research School, 2015).

## **A2: The planned programme of research**

### **A2.1 Foreword**

Addressing the gap in research, the overall aim of the study is established (*c.f.* A1.4). The overview of methodology portrays consequent research objectives, methods and analyses, specifying a coherent programme of research comprising five empirical study components.

### **A2.2 Research objectives, coherence of papers and methodology**

To address the overall aim, Table 1 provides the basis and overview of the research objectives, methods and research philosophy for each of the five papers in the study. The philosophical stance and progressive theoretical development of the study are initially discussed, followed by a synopsis of each paper, to establish the logical coherence of the study (prior to the exposition of the full papers in Part B).

**Table 1: Research objectives and methodological overview of the papers**

<b>Paper</b>	<b>Research objective</b>	<b>Research method</b>	<b>Analysis method</b>	<b>Research philosophy</b>
Paper 1	To appraise the existing state of knowledge in relation to multiple media use.	Integrative literature review	Thematic analysis	Interpretivist
Paper 2	To uncover the underlying motives for individuals' preference to multitask with media.	Qualitative: in-depth individual interviews and triad groups	Thematic analysis	Interpretivist
Paper 3	To develop a new multidimensional scale to measure polychronicity, the preference for multiple media use.	Quantitative: cross-sectional online survey	Statistical analysis	Positivist
Paper 4	To investigate the homogeneity of the impact of the dimensions of the P-MMU on multiple media use.	Quantitative: cross-sectional online survey	Statistical analysis	Positivist
Paper 5	To examine the role of regulatory mode theory in explaining the relationship between preference and multiple media use.	Quantitative: cross-sectional online surveys (two studies)	Statistical analysis	Positivist

A pragmatic philosophical stance is followed, thus rejecting the notion of one philosophical position, in favour of a combination of positions. The main principle behind pragmatism includes placing the nature of the research study and its associated research questions at the centre of the evaluation process when ascertaining the most suitable methodology (Nastasi, Hitchcock and Brown, 2010). Thus, the adoption of a pragmatic stance ensures an appropriate methodological choice for the stated aim and objectives of the study and its progressive nature (Rescher, 1995; Crotty, 2003; Tashakkori and Teddlie, 2010).

Consistently, a sequential mixed methods approach, in which one method is used as the foundation for another (Creswell and Plano Clark, 2011; Nastasi *et al.*, 2010), is considered suitable for the progressive investigation of the emergent research domain of multiple media use. Correspondingly, (as indicated in Table 1), qualitative methods are used in the earlier papers to review the literature and uncover underlying preferences for multiple media use, while quantitative methods are employed to investigate the drivers and motivations of such behaviour in later papers.

Any study that attempts to make a substantive contribution to knowledge must first establish the status of extant literature (*c.f.* Table 1). In the emergent domain of multiple media use, an integrative literature review (Toracco, 2005) is required in Paper 1, due to its efficacy in amalgamating conceptual and empirical work from a variety of perspectives. To fulfil the purpose of gaining an in-depth understanding of the breadth of preference for multiple media use; in Paper 2, an exploratory research method is indicated (Sekaran, 2013), using individual and triad interviews. Once an understanding of the breadth of preference is established, the nomological location of related constructs should be examined. Pursuing this aim, the first step is to develop appropriate operationalisations to develop and test a new multidimensional scale, for which quantitative approaches are most suitable. Consistently, in Papers 3, 4 and 5, to address the stated objectives of the study (*c.f.* Table 1), cross-sectional designs using online survey panels are considered appropriate. In choosing online panel surveys characterised by self-selection, the associated issues of data quality are acknowledged (and fully discussed in the limitations section C4), alongside the potential problems associated with compounding bias by applying a single method. For Papers 3, 4 and 5, alternative research design and data collection methods are considered (DeVaus, 2001; Sekaran and Bougie, 2016). Since there is no requirement for the manipulation of variables, an experimental design is not indicated (Saunders *et al.*, 2016; Bryman and Bell, 2015). Multiple media user data could potentially be collected through a virtual observational method such as individual mobile eye tracking

technology, but the cost of such a method for this study is prohibitive. Alternatively, respondents could be asked to record their (multiple) media use, yet this method would require a dedicated media panel which is not practicable. Accordingly, given the objectives of Papers 3, 4 and 5 and the requirement to collect data on individuals' preferences and motivations, the most suitable method is through a self-reporting instrument. In comparison with experiments and observational methods, surveys provide an apt data collection platform, as they allow data to be collected from a diverse set of respondents. Hence, online panel surveys, with accompanying mitigation for data quality issues, are considered the most pertinent method for the collection of data in Papers 3, 4 and 5.

At the outset, in Paper 1, to assess extant knowledge in the domain of multiple media use, an integrative review of literature is conducted, specified by an interpretivist research philosophy. Likewise, in Paper 2, qualitative interviews and an interpretivist philosophy are deemed necessary to uncover individuals' underlying preferences to multitask with media; the intention being to identify a comprehensive range of preference dimensions. Successively, the dimensions of preference uncovered in Paper 2 inform the development of a new, context specific, multidimensional measurement scale in Paper 3. Accordingly, the data collected for Paper 3 is quantitative in nature, facilitating appropriate statistical analysis techniques to be applied for testing the new scale, hence following a positivist research philosophy. Similarly, in its quantitative approach to the investigation of the relationship between polychronicity and multitasking in the context of multiple media use, Paper 4 follows a positivist philosophy. Lastly, employing a cross-sectional survey method to examine the role of regulatory mode theory in explaining individuals' multiple media use, a positivist research philosophy is adopted in Paper 5.

The review of literature in Paper 1 establishes the domain of multiple media use as emergent, with studies lacking theoretical underpinning. Hence, in the search for explanations for individuals' multiple media use through successive empirical work in the overall programme of research, it is necessary to draw upon several theories within the overarching framework of consumer behaviour theory. In Paper 2, Uses and Gratifications theory (Katz, Gurevitch and Hass, 1973) is deemed a relevant backdrop for the exploration of individuals' motives for multiple media use. The Uses and Gratifications tradition posits that media audiences are active, taking the initiative when making the link between their need gratification and media choice. Media are also assumed to compete with other forms of need gratification. Further, the gratifications sought from media are considered to vary

according to social roles and the psychological disposition of individuals. Thus, the behavioural phenomenon of multiple media use, typified by individuals' rapid switching between various combinations of chosen media, is compatible with the specified notions of Uses and Gratifications theory. The development of a new scale to measure polychronicity, 'the preference for multiple media use', in Paper 3, is predominantly an empirically driven study. However, once developed, the new scale is used to investigate the dimensions of polychronicity as drivers of multiple media use (in Paper 4). Consumer behaviour theory provides the foundation for the research, through evidence that preference precedes behaviour (Lavidge and Steiner, 1961). Since the behaviour of individuals takes place to pursue goals, it is posited that the underpinning motivational element for multiple media use is located within regulatory mode theory (Higgins, Kruglanski and Pierro, 2003). Locomotion and assessment are inherent modes of self-regulation within this theory, which 'emphasise the "how" of goal pursuit', (Pierro *et al.*, 2018, p245). Hence, building upon the knowledge gained from papers 1-4; in Paper 5 the role of regulatory mode theory (locomotion and assessment) is examined as a possible underpinning theoretical explanation for individuals' multiple media use. Thus, a progressive approach to theoretical development is adopted, as demonstrated in the logical coherence of the five component papers in the study.

#### **A2.2.1 Paper 1: Multiple media use, polychronicity and multitasking: a review of literature and proposed research directions.**

As shown in Table 1, Paper 1 sets out to appraise the existing state of knowledge in relation to multiple media use to identify: areas characterised by unsatisfactory knowledge development and theoretical platforms on which to base future research. Table 1 indicates an exploratory methodological approach using an integrative literature review (Toracco, 2005), which examines multiple media use and the associated concepts of polychronicity and multitasking. The abridged review of literature (*c.f.* A1.3) concludes that collectively: the emergent nature of the domain, the descriptive content of extant empirical work and absence of theoretical explanations for multiple media use, reveal a noteworthy gap in research.

Notably, polychronicity and multitasking are uncovered as important concepts in attempting to understand multiple media use (*c.f.* A1.3). Furthermore, the discovery that existing measures of polychronicity are not suitable for the specific context of multiple

media use (*c.f.* A1.3) represents an important omission. Hence, the requirement for the development of a scale to measure polychronicity in the context of multiple media use is revealed, forming the first recommendation in Paper 1. The recommendation ‘concerns the development and testing of a new scale for the measurement of polychronicity. It is expected that the new scale will be multidimensional, accounting for the various dimensions of the concept of polychronicity.’ (Robinson, 2016; Paper 1, p.143).

At this point, the reader is reminded that since the initial review of literature was conducted and documented in Paper 1, the emerging domain of multiple media has continued to evolve, in keeping with a growing interest from academics in the field. Accordingly, to keep pace with developments over the five-year period of the study, successive empirical work in subsequent papers (2-5) acknowledges new research in the field of multiple media use.

#### **A2.2.2 Paper 2: Individuals' preference for multiple media use - underlying motives**

To address the first recommendation from Paper 1, it is necessary to begin by ascertaining the range of underlying motives for individuals' preference for multiple media use (Churchill, 1979; DeVellis, 2003; Netemeyer, Bearden and Sharma, 2003). Paper 2 therefore represents the initial phase of empirical work to develop the new scale to measure polychronicity, ‘the preference for multiple media use’. As indicated in Table 1, Paper 2 seeks to uncover the underlying motives for individuals' preference to multitask with media.

Qualitative methods are used in this study to explore the concept of polychronicity in the context of multiple media use for the first time. Among a sample of Digital Natives (identified as the most prevalent multiple media users in Paper 1), face to face in-depth interviews and triad groups are employed (*c.f.* Table 1). The findings uncover the underlying motives for individuals' preferences for multiple media use, which are: comfort with multitasking; multi-channel preference; effectiveness and efficiency; convenience; emotional gratification; information and knowledge; social benefits and assimilation. The eight preference dimensions represent the first known classification of polychronicity as a preference for multiple media use. Hence, Paper 2 provides an important contribution to knowledge in this emerging domain, providing a unique insight into individuals' preference for multiple media use.

### **A2.2.3 Paper 3: 'Polychronicity - Multiple Media Use' (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.**

Following the identification of the eight dimensions, the next logical step (to fulfil the first recommendation from Paper 1) is to build and test a new scale to measure polychronicity in the context of multiple media use. Hence, Paper 3 documents the subsequent phase of empirical work: 'to develop a new multidimensional scale to measure polychronicity, the preference for multiple media use' (Robinson and Kalafatis, 2017; Paper 3, p.1422).

Adhering to accepted scale development procedure (Churchill, 1979; DeVellis, 2003; Netemeyer *et al.*, 2003), findings from the prior qualitative study (documented in Paper 2) inform this phase of the research. Consistently, the eight dimensions and their manifestations formed the starting point in the operationalisation of the new scale to measure polychronicity in the context of multiple media use.

Using a quantitative survey, data are collected on each of the scale items, from an online sample of U.K. Digital Natives (*c.f.* Table 1). Subsequent testing confirms the psychometric properties of the developed scales. Exploratory Factor Analysis (EFA) divides 'Comfort with multiple media use' (revealed in Paper 2) into two dimensions: 'Comfort with multiple media use' and 'Compulsive - addictive'; with the remaining seven dimensions from Paper 2 retained. The nine-dimensional measure of polychronicity, the preference for multiple media use (named the P-MMU), represents a notable step towards an understanding of polychronicity, by determining the dimensions of individuals' preference for multiple media use. Furthermore, in the evolving research area of multiple media use, the new P-MMU scale contributes an appropriate measure for future investigations of this behavioural phenomenon.

### **A2.2.4 Paper 4: Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.**

Focussing on the premise that the preference to behave should precede the behaviour itself, leads to the suggestion of a causal relationship between polychronicity and multitasking. Therefore, addressing the second recommendation from Paper 1, the relationship between polychronicity and multiple media use is tested. Using the new P-MMU measure, Paper 4 examines the dimensions of polychronicity as drivers of media multitasking. However, since there are many possible combinations of media, differential



behaviour is expected in the nature and strengths of such relationships. Correspondingly, the initial objective is: 'an investigation of the homogeneity of the impact of the dimensions of the P-MMU on multiple media use' (Robinson and Kalafatis; 2019, Paper 4, p.255). Initial analysis provides support for the expected heterogeneity, hence the next objectives is: 'using the structure of the functional relationships between the dimensions of the P-MMU and multiple media use, group individuals into segments' (Robinson and Kalafatis; 2019; Paper 4, p.256). Following the grouping and identification of the segments, the final objectives are the: 'identification of specific segment-by-segment preferences for multiple media use' and 'characterisation of segments as a function of the identified combinations of multiple media use' (Robinson and Kalafatis, 2019; Paper 4, p.256).

Data are collected using a web-based self-completion survey from a sample of U.K. Digital Natives (*c.f.* Table 1). Paper 4 ascertains the functional relationship between polychronicity and multiple media use. Furthermore, advanced analysis leads to the exposure of heterogeneity in the impact of the dimensions of polychronicity on multiple media use, indicating that the functional relationship varies between individuals. Additional scrutiny reveals three distinct segments, each emphasising a different set of preference dimensions for its' multiple media use. The discovery of the three segments labelled: 'Information seekers', 'Connecteds' and 'Instinctives' leads to the formation of the first known multiple media use typology (termed the MMU-T). Furthermore, a comparison of cross-media use identifies distinct patterns of multiple media use for each of the three segments.

Contributions to subject knowledge include: a unique typology of multiple media users (the MMU-T), the determination of the preference drivers of multiple media use (on which the three segments are based) and the identification of distinct patterns of multiple media use by each segment.

#### **A2.2.5 Paper 5: Regulatory Mode Theory - effects on multiple media use.**

Using the collective empirical findings from papers 2 - 4, in Paper 5, the role of regulatory mode theory (locomotion and assessment) (Higgins *et al.*, 2003) is examined as a possible underpinning theoretical explanation for individuals' multiple media use. Explicitly building on the findings of Paper 4, Paper 5 examines the role of regulatory mode as a motivation for individuals' multiple media use. The aim of the study is 'to examine the role of regulatory mode theory in explaining the relationship between preference and multiple media use' (Robinson, 2020; Paper 5, p.38). As a prominent theory of self-regulation,

regulatory mode theory incorporates the action related orientations of assessment and locomotion. Assessment embodies self-regulation by making comparisons between alternatives (Higgins *et al.*, 2003), while locomotion focusses on the movement of an individual from one (psychological or physical) state to another (Pierro *et al.*, 2018). Locomotion is previously linked with multitasking in a study by Pierro *et al.* (2013), and regulatory mode is also considered apt for the study of media multitasking due to its action orientation. For multiple media use, the selection of a personal media portfolio involves assessment of media alternatives and during the act of multiple media use, individuals switch from one medium to another, representing the features of the locomotion orientation.

Two studies are undertaken wherein data are collected using two web-based self-completion surveys from a sample of U.K. Digital Natives (*c.f.* Table 1). Forming the basis for Study 2, the relationship between regulatory mode (locomotion and assessment) and multiple media use is ascertained in Study 1. Subsequently, in Study 2, the preference for multiple media use is introduced (using the P-MMU). Following the comparison of two competing models, Paper 5 establishes that the regulatory mode orientations of locomotion and assessment moderate the functional relationship between the dimensions of preference and multiple media use. Motivation (represented by regulatory mode) helps to explain the strength of the relationship between the preference dimensions of the P-MMU and multiple media use, providing a unique insight into the relationship. Paper 5 documents the first known study to offer a theoretically grounded explanation for individuals multiple media use.

### **A2.3 Structure of thesis**

Part B of the thesis details the empirical research conducted in Papers 1 - 5, examining the contribution of each paper to the overall aim of the study. In Chapters B1 - B5, which form Part B, each Paper is preceded by a structured abstract. Part C concludes the thesis: contemplating the theoretical contributions of the overall study and considering the implications of findings for marketing communications and advertising practitioners. Future research directions are outlined and the limitations of the research are acknowledged. The references used in the overarching document are listed in Part D, while Part E contains technical appendices for Papers 1 - 5.

## **PART B: Empirical research Papers 1-5**

The following Chapters (B1 - B5) present the five component papers. In each Chapter, as an overview, the paper is preceded by a structured abstract. A common framework, originating from the Emerald Publishing structured abstract guidelines, is adopted. Additions include author contributions and article quality information, required for the Alternative Format Thesis (FRDC, 2013; Graduate Research School, 2015).

## **B1 Paper 1:**

**Multiple media use, polychronicity and multitasking: a review of literature and proposed research directions.**

### **B1.1 Paper 1 Abstract**

#### **B1.1.1 Foreword**

The review of literature in Paper 1 provides the foundation for all subsequent papers. Recommendations from Paper 1 are addressed and detailed in following Papers 2, 3 and 4.

#### **B1.1.2 Purpose**

The purpose of Paper 1 is to assess the current state of knowledge in relation to the phenomenon of multiple media use, critically synthesising extant literature to identify the presence of research gaps in this domain.

#### **B1.1.3 Design/methodology/approach**

An integrative literature review is the chosen research method for Paper 1, as it is appropriate for combining conceptual and empirical work and assessing literature originating from a variety of perspectives.

#### **B1.1.4 Findings**

Multiple media use is established as an emerging area of research. Extant work is found to be largely descriptive in nature, lacking in theoretical underpinning and making no attempt to explain the phenomenon of multiple media use. Hence, it is concluded that notable research gaps exist in this domain. The concepts of polychronicity and multitasking are identified as relevant to the study of multiple media use and are pursued in later papers. Extant measures of polychronicity are primarily developed from an organisational perspective, or do not possess the required detail for the measurement of the complex behavioural phenomenon of multiple media use.

#### **B1.1.5 Research limitations**

Literature reviews are sometimes criticised on the basis that the choice of studies included in a review are inherently prone to the partiality of the reviewer (Denyer and Tranfield, 2006). However, adopting a planned and systematic approach to this integrative literature review minimises the risk of bias.

#### **B1.1.6 Implications for practitioners**

Although indirectly relevant to the marketing communications practitioner, the implications of the findings of the review of academic literature in Paper 1 are of primary interest to the academic research community.

#### **B1.1.7 Originality/value**

The review of literature provides a valuable summary of existing empirical work in the domain of multiple media use. The dearth of research and lack of theoretical underpinning indicate a notable research gap. Identification of the concepts of polychronicity and multitasking contribute an important first step forward, establishing a point of departure for future research directions in the domain.

#### **B1.1.8 Author contributions**

Paper 1 is wholly authored by the PhD candidate.

#### **B1.1.9 Journal quality/selection**

*The Marketing Review* particularly welcomes literature review articles from a range of topic areas within the marketing domain. A special issue, focussing on marketing communications (organised by the Marketing Communications Special Interest Group, in association with the Academy of Marketing), is apt for this review of literature in the domain of multiple media use. At the time of submission of the article, *The Marketing Review* was ranked ABS=1\* (currently, the journal is not ABS listed).

## **B1.2 Paper 1**

**Multiple media use, polychronicity and multitasking: a review of literature and proposed research directions.**

### **Paper reference:**

Robinson, H. (2016) 'Multiple media use, polychronicity and multitasking: A review of literature and proposed research directions.' *The Marketing Review*, 16 (2), pp.129-147.

### **Link:**

[Multiple media use, polychronicity and multitasking: A review of ...: Ingenta Connect \(doi.org\)](#)

**Note: A Technical Appendix for Paper 1 is found in Section E1.**

## **B2 Paper 2:**

### **Individuals' preference for multiple media use - underlying motives.**

#### **B2.1 Paper 2 Abstract**

##### **B2.1.1 Foreword**

Questioning the relevance of extant measures of polychronicity (which are primarily developed from an organisational perspective, or do not possess the required detail for the measurement of the complex behavioural phenomenon of multiple media use) to media multitasking, Paper 2 addresses the first recommendation from Paper 1: to develop and test a new multidimensional scale to measure polychronicity in the context of multiple media use. An exploratory study is documented, forming the initial phase of the scale development process. Although the title of the paper includes the word motives, it should be noted that the essence of the paper concerns preference.

##### **B2.1.2 Purpose**

In seeking to identify the range of preferences of individuals who multitask with media, the purpose of Paper 2 is to uncover the underlying forms of individuals' polychronicity, the preference to multitask with media.

##### **B2.1.3 Design/methodology/approach**

For this in-depth exploratory study, to reveal the range of preferences of individuals for multiple media use, qualitative research is chosen, using face to face interviews and triad groups. In total, thirty-four in-depth interviews were conducted among Digital Natives (adults born after 1980) (Prensky, 2001) in the UK, Germany and Australia, with four subsequent triads in the UK.

##### **B2.1.4 Findings**

Using a thematic approach, individuals' preferences for multiple media are categorised as eight dimensions: comfort with multitasking, multi-channel preference, effectiveness and efficiency, convenience, emotional gratification, information and knowledge, social benefits and assimilation.

### **B2.1.5 Research limitations**

A non-probability sample of a specific sample group (Digital Natives) is used, and despite the reassurance provided by quality criteria and triangulation, generalising from this study is problematic. Hence, future research to validate the eight dimensions is required.

### **B2.1.6 Implications for practitioners**

For marketing communications and media channel planners endeavouring to optimise clients' budgets; the unique knowledge provided by the depth of understanding offered by the eight dimensions of polychronicity, provides an empirical platform for the media channel planning process.

### **B2.1.7 Originality/value**

This paper presents the first insight into individuals' preference for multiple media use, uncovering the underlying dimensions of this behavioural phenomenon. The formation of eight dimensions confirms initial views from Paper 1 regarding the need for a context specific multidimensional measure of polychronicity. Accordingly, this study makes a valuable contribution to our understanding of the breadth of preference for multiple media use, in this emerging research domain.

### **B2.1.8 Author contributions**

Paper 2 is wholly authored by the PhD candidate.

### **B2.1.9 Journal quality/selection**

*Qualitative Market Research: An International Journal* is a respected ABS=2\* ranked journal in the marketing subject area. The journal is noted for its dissemination of a wide range of marketing focussed research studies, all conducted using a variety of qualitative research techniques. As such, the journal represents an appropriate location for this exploratory study among multiple media users. A further indication of the quality of Paper 2 is provided by the Mock REF Panel (2018), in which the article was categorised as '2'.



## **B2.2 Paper 2**

**Individuals' preference for multiple media use - underlying motives.**

### **Paper reference:**

Robinson, H.R. (2017) 'Individuals' preference for multiple media use - underlying motives.' *Qualitative Market Research: An International Journal*, 20 (4), pp.435-451.

### **Link:**

[Individuals' preference for multiple media use – underlying motives | Emerald Insight](#)

**Note: A Technical Appendix for Paper 2 is found in Section E2.**

### **B3 Paper 3:**

**The ‘Polychronicity – Multiple Media Use’ (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.**

#### **B3.1 Paper 3 Abstract**

##### **B3.1.1 Foreword**

Following the initial phase of scale development, uncovering the eight dimensions of individuals’ preference for multiple media use (documented in Paper 2), Paper 3 presents the next stage in the process, operationalising and testing the scale.

##### **B3.1.2 Purpose**

The purpose of Paper 3 is to develop and test the new multidimensional scale to measure polychronicity, ‘the preference for multiple media use’.

##### **B3.1.3 Design/methodology/approach**

The eight dimensions of polychronicity, revealed in the prior qualitative study (Paper 2), guide the operationalisation of the new multidimensional scale, comprising 56 scale items. Data are collected from an online survey sample of U.K. Digital Natives (Prensky, 2001) (n=317).

##### **B3.1.4 Findings**

A nine-dimensional scale to measure polychronicity in the context of multiple media use (named the P-MMU) is developed and tested, demonstrating stability across two data sets, with a total sample of 317 Digital Natives. The study started with the eight dimensions uncovered in Paper 2; as a result of EFA, ‘Comfort with multiple media use’ (identified in Paper 2) is divided into two dimensions: ‘Comfort with multiple media use’ and ‘Compulsive addictive’ (providing an additional dimension).

##### **B3.1.5 Research limitations**

Data collection relied on an opt-in panel, which may produce sample bias, although this is mitigated by the professional list broker administration procedures. Additionally, cross-

sectional self-report questionnaires can result in systematic bias, but steps such as piloting and randomisation of items and dimensions were employed to diminish this problem.

#### **B3.1.6 Implications for practitioners**

The P-MMU scale offers a unique multifaceted and multidimensional insight into individuals' preference for multiple media use, providing a valuable planning resource for marketing communications practitioners. The P-MMU scale also provides a suitable context specific measure for use in ad-hoc surveys, among individuals in specific target audiences, at the planning stage of clients' brand campaigns.

#### **B3.1.7 Originality/value**

In the emerging domain of multiple media use, the P-MMU scale contributes the first appropriate measure for the study of this behavioural phenomenon. The nine scale dimensions introduce a granular perspective from which to examine multiple media use, providing empirical support for the conceptualised dimensions (formed through prior appraisal of literature and qualitative study in Papers 1 and 2).

#### **B3.1.8 Author contributions**

Paper 3 is authored by the PhD candidate. The methodology and analysis sections were devised in collaboration with the Director of Studies - Professor Stavros Kalafatis.

#### **B3.1.9 Journal quality/selection**

The *Journal of Marketing Management* is a well-regarded ABS=2\* ranked international marketing journal. The journal incorporates articles from a wide range of themes across the marketing discipline, including the domain of marketing communications, in which the specific topic of multiple media use resides. A further indication of the quality of Paper 3 is provided by the Mock REF Panel (2018), in which the article was categorised as '3'.

### **B3.2 Paper 3**

**The 'Polychronicity - Multiple Media Use' (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.**

**Paper reference:**

Robinson, H.R. and Kalafatis, S.P. (2017) 'The 'Polychronicity – Multiple Media Use' (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.' *Journal of Marketing Management*, 33, 17-18, pp.1421-1442.

**Link:**

[The 'Polychronicity - Multiple Media Use' \(P-MMU\) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use: Journal of Marketing Management: Vol 33, No 17-18 \(tandfonline.com\)](#)

**Note: A Technical Appendix for Paper 3 is found in Section E3.**

## **B4 Paper 4:**

**Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.**

### **B4.1 Paper 4 Abstract**

#### **B4.1.1 Foreword**

Addressing the second recommendation from Paper 1, Paper 4 examines the functional relationship between polychronicity and multiple media use, using the P-MMU scale.

#### **B4.1.2 Purpose**

The purpose of Paper 4 is to investigate the causal relationship between preference and multiple media use, testing the dimensions of the P-MMU as drivers of multiple media use. Subsequently, differential behaviour in the nature and strength of relationships between the concepts is examined.

#### **B4.1.3 Design/methodology/approach**

Data are collected from a sample of 315 U.K. Digital Native respondents (Prensky, 2001), using a web-based self-completion survey administered through an opt-in professional panel.

#### **B4.1.4 Findings**

A causal relationship between the dimensions of the P-MMU and multiple media use is confirmed. Moreover, heterogeneity in the impact of the dimensions of the P-MMU on multiple media use is discovered, indicating that the functional relationship varies between individuals. Three segments are identified: 'Information seekers', 'Connecteds' and 'Instinctives', leading to the formation of the multiple media use typology (MMU-T). Distinct patterns of cross-media use are identified for each segment.

#### **B4.1.5 Research limitations**

The use of an opt-in panel, administered by a professional list broker, can result in sample bias, despite vigilant management of the research process. Cross-sectional self-report

questionnaires are prone to systematic bias, although randomisation measures are employed to alleviate this shortcoming.

#### **B4.1.6 Implications for practitioners**

The Multiple Media User Typology (MMU-T): 'Information seekers', 'Connecteds' and 'Instinctives', provides a unique tool for planners of multi-media marketing communications campaigns, attempting to reach brand audiences effectively and efficiently.

#### **B4.1.7 Originality/value**

Contributions to subject knowledge include: the first known typology of multiple media users, the determination of the preference drivers of multiple media use for each segment of the MMU-T and the detection of distinct patterns of multiple media use for 'Information seekers', 'Connecteds' and 'Instinctives'.

#### **B4.1.8 Author contributions**

Paper 4 is jointly authored. The paper is predominantly authored by the PhD candidate; the Analysis section (5.0) is written in collaboration with the Director of Studies - Professor Stavros Kalafatis.

#### **B4.1.9 Journal quality/selection**

The *Journal of Advertising Research* is an internationally renowned ABS=3\* ranked journal, focussing on topical issues within the advertising and marketing communications domain, and is therefore appropriate for the emerging topic of multiple media use. A particular attraction is that in addition to the academic community, the journal has a distinctive leaning towards the practitioner perspective.

## **B4.2 Paper 4**

**Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.**

### **Paper reference:**

Robinson, H.R. and Kalafatis, S.P. (2019) 'Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.' *Journal of Advertising Research*, Digital First, (12) pp.1-20.

### **Link:**

[Why Do People Choose To Multitask with Media? | the Journal of Advertising Research](#)

**Note: A Technical Appendix for Paper 4 is found in Section E4.**

## **B5 Paper 5:**

### **Regulatory Mode Theory - effects on multiple media use.**

#### **B5.1 Paper 5 Abstract**

##### **B5.1.1 Foreword**

Developing the findings of Paper 4, indicating differences between individuals with respect to their preferences or multiple media use, Paper 5 examines the role of motivation on individuals' multiple media use.

##### **B5.1.2 Purpose**

Paper 4 indicates differential effects of the dimensions of preference for multiple media use. Extant research also ascertains the functional relationship between motivation and preference. The purpose of Paper 5 is to examine the role of regulatory mode theory (locomotion and assessment) in the relationship between the dimensions of the P-MMU and multiple media use.

##### **B5.1.3 Design/methodology/approach**

Using a cross-sectional design, two studies are conducted. Data are collected using web-based self-completion surveys from a sample of U.K. Digital Natives (Prensky, 2001), supplied by a professional list broker. The first survey generated 270 usable responses and the second 210.

##### **B5.1.4 Findings**

Comparing two competing models, the findings establish that the regulatory mode orientations of locomotion and assessment moderate the functional relationship between the dimensions of preference and multiple media use.

##### **B5.1.5 Research limitations**

Data collection included the use of opt-in samples, managed by a professional list broker. Despite every effort to maximise panel effectiveness, in using this method, sample bias and non-response remain outside the control of the researcher. In addition, media use is self-reported rather than actual behaviour.



#### **B5.1.6 Practical implications**

Alongside syndicated media research sources, media planners are able to refine their multi-media channel decisions by applying the detailed understanding of individuals' motivation and preferences for multiple media use discovered in this study.

#### **B5.1.7 Originality/value**

The findings extend the work of Paper 4 (Robinson and Kalafatis, 2019), providing explanations for the established P-MMU to multiple media use patterns, through the introduction of regulatory mode orientations. The paper provides a unique insight into the relationship between motivation (represented by regulatory mode), preference and the act of multiple media use, affording an explanation of why individuals choose to multitask with media. This study is the first to offer a theoretically grounded explanation regarding the underlying motivation for multiple media use.

#### **B5.1.8 Author contributions**

Paper 2 is wholly authored by the PhD candidate.

#### **B5.1.9 Journal quality/selection**

The *European Journal of Marketing* is an internationally renowned ABS=3\* ranked journal, focussing on topical issues within the wide-ranging marketing domain, and is therefore considered an appropriate publication for the dissemination of knowledge in the emerging topic of multiple media use.

**B5.2 Paper 5:**

**Regulatory Mode Theory - effects on multiple media use.**

**Note: A Technical Appendix for Paper 5 is found in Section E5.**

## **Abstract**

### **Purpose:**

The literature indicates differential effects of the dimensions of preference for multiple media use. Previous research also ascertains the functional relationship between motivation and preference. This study examines the role of motivation on individuals' multiple media use.

### **Design/ methodology/ approach:**

Using a cross-sectional design, two studies are conducted. Data are collected using web-based self-completion surveys from a sample of U.K. Digital Natives (adults born after 1980, Prensky, 2001), supplied by a professional list broker. The first survey generated 270 usable responses and the second 210.

### **Findings:**

Comparing two competing models, the findings establish that the regulatory mode orientations of locomotion and assessment moderate the functional relationship between the dimensions of preference and multiple media use.

### **Research limitations:**

Data collection utilised opt-in samples managed by a professional list broker. Despite every effort to maximise panel effectiveness, sample bias and non-response remain outside the control of the researcher. Media use is self-reported rather than actual behaviour.

### **Practical implications:**

Alongside syndicated media research sources, media planners should refine their multi-media channel decisions by applying the detailed understanding of individuals' motivation and preferences for multiple media use discovered in this study.

### **Originality/ value:**

The paper provides a unique insight into the relationship between motivation (represented by regulatory mode), preference and the act of multiple media use. This study is the first to offer a theoretically grounded explanation for individuals' motivation to multitask with media.

**Keywords:** Multiple media use, polychronicity, media multitasking, regulatory mode theory

**Article classification:** Research paper

## 1.0 Introduction - multiple media use

Modern media consumption is typified by the multiple media use of individuals. As a specific case of multitasking (Rosen *et al.*, 2013), defined as the performance of several tasks in the same time period characterised by frequent switches between tasks (Delbridge, 2000; Oswald *et al.*, 2007); multiple media use involves switching between selected media. An example is attending to incoming social media notifications, while watching a television programme and checking the online score of a live sporting event. Individuals' multiple media use is facilitated by a wide range of online and offline media channels. A plethora of assorted websites, social media sites and traditional media channels are accessible on a variety of media devices, such as: mobiles, laptops, games consoles, televisions and radios. Consequently, an extensive array of media consumption choices and numerous multiple media combinations are within easy access of individual media consumers. However, the inherent complexities of multiple media use present a challenge for planners of marketing communication and advertising campaigns, endeavouring to optimise media choice on behalf of clients. Hence, for practitioners, a greater understanding of the phenomenon is needed.

Extant empirical work offers insights into predominant multiple media combinations (Carrier *et al.*, 2015; Foehr, 2006; Pilotta *et al.*, 2004; Pilotta and Schultz, 2005; Segijn *et al.*, 2017), identifying the characteristics of those who multitask with media (for example, Carrier *et al.*, 2009; Jeong and Fishbein, 2007; Srivastava *et al.*, 2016). In the evolving body of literature, the precursors to multiple media use are categorised into five main themes (Robinson and Kalafatis, 2019). Media ownership and access to media are confirmed pre-requisites of multiple media use. Empirical work indicates a significant positive association between the ownership of televisions, radios, laptops and smartphones and multiple media use (Jeong and Fishbein, 2007; Kononova and Chiang, 2015; Wang and Tchernev, 2012; Srivastava *et al.*, 2016; Segijn *et al.*, 2017). Ease of media access is also established as a key requirement for those choosing to multitask with media (Jeong and Fishbein, 2007; Wang and Tchernev, 2012; Rubenking, 2016). Evidence also exists regarding demographic associations with multiple media use. For example, Digital Natives, classified as 'all native speakers of the digital language of computers, video games and the internet' (Prensky, 2001, p1) are confirmed as the most prevalent multiple media users, when compared with Digital Immigrants, born before 1980 (Carrier *et al.*, 2009; Carrier *et al.*, 2015; Wang and Tchernev, 2012; Duff *et al.*, 2014; Srivastava *et al.*, 2016; Segijn *et al.*, 2017). Personal traits

are also linked with multiple media use. A tendency towards sensation seeking (signified by 'new and exciting experiences' and 'exploring strange places', Hoyle *et al.*, 2002) is confirmed as a significant determinant of multiple media use (Duff *et al.*, 2014; Jeong and Fishbein, 2007; Kononova and Chiang, 2015; Yang and Zhu, 2016), alongside creativity (Duff *et al.*, 2014), immersive tendency (Rubenking, 2016) and impulsivity (Yang and Zhu, 2016).

Concurrence exists in the literature regarding the habitual nature of multiple media use (Hwang *et al.*, 2014; Wang and Tchernev, 2012), with some individuals feeling drawn to such behaviour (Kononova and Chiang, 2015). A desire for personal efficiency (Bardhi *et al.*, 2010), simplicity (Duff *et al.*, 2014) and control (Bardhi *et al.*, 2010; Duff *et al.*, 2014; Kononova and Chiang, 2015) are also identified precursors for multiple media use. Additionally, a wish to review materials from a variety of sources (Hwang *et al.*, 2014) and assimilate several streams of information is identified (Bardhi *et al.*, 2010). The social aspects of multiple media use, such as connecting with friends and family, are also revealed (Kononova and Chiang, 2015), alongside perceived emotional gratification (Wang and Tchernev, 2012), enjoyment (Hwang *et al.*, 2014) and entertainment (Kononova and Chiang, 2015). While the above studies contribute to subject knowledge, providing insights into multiple media use, the underlying preferences of individuals to multitask with media must also be considered.

Pursuing the concept of preference, consumer behaviour theory is informative, providing evidence from the marketing literature that preference precedes behaviour (Lavidge and Steiner, 1961; Lee, Amir and Ariely, 2009). Consistently, the preference to multitask, or polychronicity, is identified as a relevant concept in recent literature examining multiple media use (Kononova and Chiang, 2015; Robinson, 2016; Srivastava *et al.*, 2016). A detailed exploration of the concept in the media context, reveals eight dimensions of polychronicity (Robinson, 2017a). Furthermore, the combination of exploratory and confirmatory research leads to the development of a nine-dimensional Polychronicity-Multiple Media Use (P-MMU) scale (Robinson and Kalafatis, 2017). Applying the P-MMU scale, a positive functional relationship between the dimensions of polychronicity and multiple media use is ascertained (Robinson and Kalafatis, 2019). Moreover, the research identifies differential effects among individuals' preferences, whereby different P-MMU dimensions are indicated. While these findings provide notable advances in our understanding of the effects of various dimensions of individuals' preference for multiple media use, the literature is silent with respect to why these differences exist.

To address the highlighted gap in knowledge, empirical work is required to gain insights into the relationship between preference and multiple media use. The consumer behaviour literature is helpful in this regard, explicitly linking motivation and preference (Whitley *et al.*, 2018; Imrak *et al.*, 2010). Individual motivations, defined as 'inner conditions' playing a part in consumers' behaviour (Smith, 1954, p.5), are examined to gain an understanding of buying behaviour (Barbopoulos and Johansson, 2017; Fullerton, 2013). The buying and usage decisions of consumers are influenced by a variety of motivations, for personal pleasure or to meet functional requirements (for example, Hirschman and Holbrook, 1982; Dhar *et al.*, 2000). Correspondingly, in the media consumption context, it is postulated that the relationship between preference and multiple media use is influenced by the motivations of individuals. An important aspect of consumers' inner motivation is self-regulation, defined as 'the capacity of individuals to guide themselves, in any way possible, towards important goal states' (Fitzsimons and Bargh, 2004, p.151). Within self-regulation, regulatory mode theory 'emphasises the 'how' of goal pursuit' (Pierro *et al.*, 2018, p.245). Accordingly, it is argued that the behavioural nature of regulatory mode theory provides an appropriate perspective from which to examine the role of motivation in multiple media use.

The aim of the study is to examine the role of regulatory mode theory in explaining the relationship between preference and multiple media use. In particular, the paper examines regulatory mode theory (locomotion and assessment) as a motivation for individuals' multiple media use. Two studies are undertaken; Study 1 tests the relationship between regulatory mode theory (locomotion and assessment) and multiple media use, before Study 2 incorporates preference for multiple media use (using the P-MMU). The literature reveals two possible conceptualisations of the role of regulatory mode in the preference to multiple media use relationship: as an antecedent to preference (for example, Whitley *et al.*, 2018) and as a moderator in the preference to multiple media use relationship (for example, Benjamin and Flynn, 2006). The study finds that regulatory mode moderates the relationship between preference and multiple media use. Following a brief introduction to regulatory mode theory, competing conceptual models are developed; associated methods and findings are presented, and contributions discussed.

## 2.0 Regulatory Mode theory

Self-regulation is characterised by an individual making a decision about something they want to do, working out what they need to do to get it done, and then making it happen (Higgins *et al.*, 2003). Two prominent theories of self-regulation are Regulatory Focus and Regulatory Mode (Higgins *et al.*, 2003). Regulatory focus theory emphasises the self-regulation engagement orientations, prevention and promotion, while regulatory mode theory emphasises the action related orientations involved in self-regulation i.e. assessment (or thinking) and locomotion (or doing) (Higgins *et al.*, 2003; Kruglanski *et al.*, 2013; Pierro *et al.*, 2018). Regulatory mode theory is considered more appropriate for the study of multiple media use, due to its action orientation. In selecting a multiple media portfolio, individuals assess alternative media options, while during multiple media use, individuals switch from one media to another, thus enacting the locomotion orientation.

Regulatory mode theory conceptualises assessment and locomotion as independent orientations, which may work separately or together (Higgins *et al.*, 2003). The assessment orientation represents the aspect of self-regulation concerned with making comparisons between various available options. (Higgins *et al.*, 2003). For an individual, assessment represents the act of measuring and evaluating one alternative against another. Hence, regulatory mode theory posits that assessment is the aspect of self-regulation concerned with comparison (Pierro *et al.*, 2018). The locomotion orientation represents the characteristic of self-regulation focussing on the movement of an individual from (psychological or physical) state to state (Pierro *et al.*, 2018). Hence, locomotion encapsulates the constant movement of an individual from one activity to another (Pierro *et al.*, 2018). The assessment and locomotion orientations themselves represent dimensions, and as such, can vary from high to low (Higgins *et al.*, 2003). Some individuals are prone to be high, some low and some along the continuum in between the extremes (Higgins *et al.*, 2003). Additionally, the situations in which individuals find themselves can vary, thus encouraging a high or low assessment or locomotion orientation (Higgins *et al.*, 2003). The charming stereotypical Winnie the Pooh characters are effectively used by Higgins *et al.* (2003, p.298) to illustrate the extremes of both orientations, whereby 'Tigger is high in locomotion, Eeyore is high in assessment, Christopher Robin is high in both and lovable Pooh is high in neither'.

Extant research provides extensive evidence of the relevance or explanatory powers of regulatory mode theory. Several applications of regulatory mode theory examine the

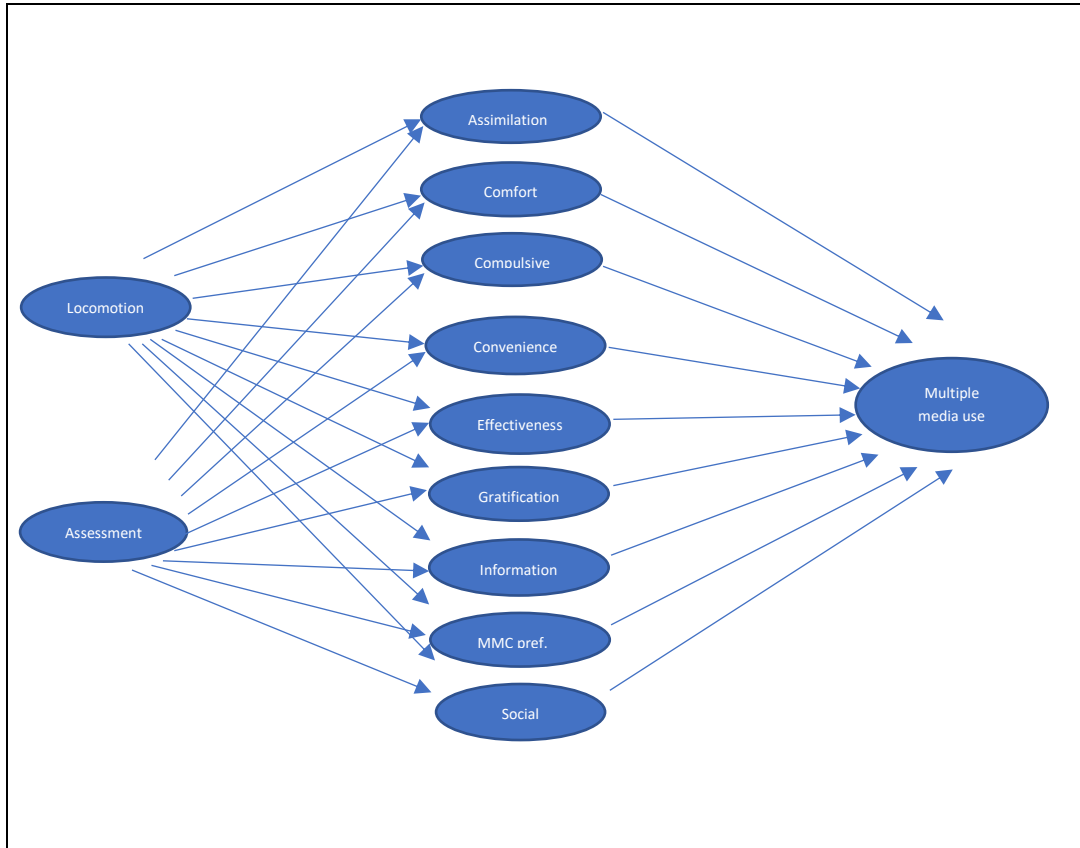
general psychological states of individuals, associating locomotion and assessment with, for example, well-being (Giacomantonio *et al.*, 2013; Garcia *et al.*, 2015), self-forgiveness (Pierro *et al.*, 2018), procrastination (Pierro *et al.*, 2011) and risk-taking tendency (Panno *et al.*, 2014; Panno *et al.*, 2015). Another notable body of empirical work investigates regulatory mode in relation to individuals behaviour within an organisational setting, considering various aspects of leadership (Pierro *et al.*, 2012; Kruglanski *et al.*, 2007; Pierro *et al.*, 2009), task performance (Chernikova *et al.*, 2016) and time management (Amato *et al.*, 2014). To date, consumer behaviour applications of the theory are limited (Mathmann *et al.*, 2017; Mathmann *et al.*, 2017). In the B2B environment, regulatory mode is examined in relation to customer service behaviour, where locomotion and assessment are found to explain service-sales ambidexterity (Sok *et al.*, 2016; Jasmand *et al.*, 2012). Regulatory mode is not yet examined in the media multitasking context. Nevertheless, in an organisational multitasking setting, the examination of regulatory mode is found in one study, which identifies that employees who score highly on locomotion benefit more from multitasking activities (Pierro *et al.*, 2013). However, the omission of the assessment orientation from the study allows only partial explanation of the role of regulatory mode.

### **3.0 Conceptual framework**

The departure point for this study is the established link between preference and multiple media use. Robinson and Kalafatis (2019) ascertain a differential pattern in preference determinants (of the P-MMU) among individuals, but do not provide reasons for such differences. In attempting to explain the preference to multiple media use relationship, the preceding discussion concludes that motivation, represented by regulatory mode theory, is apt. Two competing models are conceptualised and tested in this study. In Figure 1, guided by the known relationship between the nine preference dimensions of the P-MMU and multiple media use (Robinson and Kalafatis, 2019), and the link between motivation and preference (Whitley *et al.*, 2018; Imrak *et al.*, 2010; Van der Walle *et al.*, 2015), motivation (represented by the regulatory mode orientations of locomotion and assessment) is modelled as a determinant of preference. Hence, in Model 1, the preference dimensions of the P-MMU mediate the relationship between regulatory mode and multiple media use. The general expectation is one of total or partial mediation by the P-MMU dimensions.

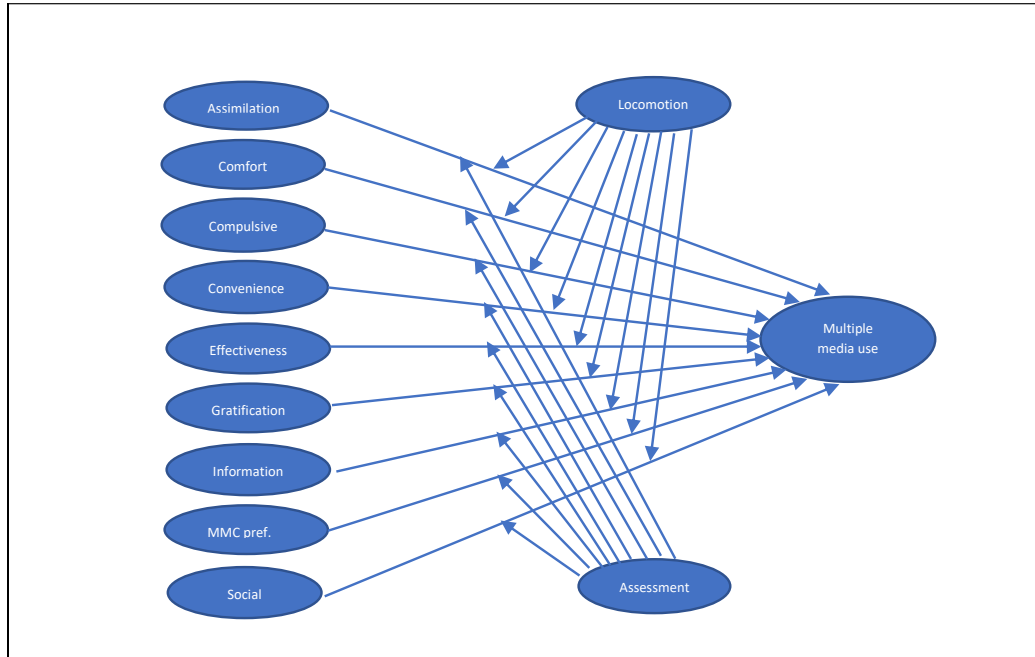


Figure 1: Model 1: regulatory mode as a determinant of the P-MMU dimensions



Alternatively, the regulatory mode literature provides evidence of the moderating role of the regulatory mode orientations of assessment and locomotion (Benjamin and Flynn, 2006; Chernikova *et al.*, 2016; Mannetti *et al.*, 2012). In Model 2, due to the absence of context specific literature, the logic from regulatory mode theory literature in the marketing setting (Mathmann *et al.*, 2017; Mathmann *et al.*, 2017) is applied to the media context of this study. Hence, the regulatory mode orientations of locomotion and assessment are modelled as moderating the relationships between each of the P-MMU dimensions and multiple media use (as illustrated in Figure 2).

Figure 2: Model 2 - regulatory mode as a moderator of the P-MMU to multiple media use relationship



## 4.0 Research methods

### 4.1 Research design

The research is completed in two phases. The first phase comprises a preliminary study (Study 1), to ascertain the significant functional relationship between regulatory mode (locomotion and assessment) and multiple media use; this relationship must be established before embarking on the focal study in phase two. Once this relationship is confirmed, the second phase of research (Study 2) may proceed, testing the two models.

### 4.2 Measures

The regulatory mode scale is used to measure the locomotion and assessment orientations of individuals (Kruglanski *et al.*, 2000). For each orientation, a twelve-item measure is applied, capturing individual differences in the tendency towards locomotion and assessment. For each orientation, respondents are required to rate the extent of their agreement or disagreement with each of twelve statements. Ratings are completed on a six-point Likert scale, anchored on 'strongly agree' and 'strongly disagree' (Appendix 1). Preference is operationalised using the P-MMU scale (Robinson and Kalafatis, 2017), in which each of the nine dimensions is reflective. Data are acquired using four (seven-point) item Likert scales anchored on 'strongly agree' and 'strongly disagree' (Appendix 2).

For multiple media use, data are collected regarding the use and cross-use of several media, using the MMI measure (Ophir *et al.*, 2009). As a trait index, the MMI specifies the average amount of multiple media use during a typical hour of media usage. Media included are: - surfing the internet, reading magazines, reading newspapers, text messaging, watching TV, listening to the radio, going to the cinema, playing video games, listening to music and using social media. Using a four-item scale anchored on 'most of the time' and 'never', the (a) average number of hours per week spent on each media (number of hours) and (b) use of one medium, while at the same time engaging with each of the other media are measured. The adopted operationalisation generates a weighted index of media use. Demographic measures in the study include age and gender.

#### *4.3 Sampling and data collection*

A cross-sectional design is commissioned for Study 1 and Study 2, whereby data are collected using two web-based self-completion surveys from a sample of U.K. Digital Natives (adults born after 1980, Prensky, 2001), supplied by a professional list broker. In each study, for the duration of each survey, randomisation procedures are applied to the P-MMU scale and the locomotion and assessment orientations of the regulatory mode theory scale. The first survey generated 270 usable responses and the second 210. Both surveys were balanced with respect to gender (male, 50%; female 50%) and age group (15-19, 30%; 20-24, 35%; and 25-38, 35%).

### **5.0 Analysis**

Study 1 data are analysed to establish the functional relationship between the locomotion and assessment orientations of regulatory mode and multiple media use, before proceeding to the focal aim of the research in Study 2. The analytical approach in Hair *et al.*, (2016a; 2018) is adopted, whereby analyses utilise SmartPLS (v 3.2.6; Ringle *et al.*, 2015) with bootstrapping (5000 samples) to determine statistical significance.

#### **5.1 Multiple media use**

The starting point for analysis is the calculation of multiple media use, applying the Media Multitasking Index (MMI) formula (Ophir *et al.*, 2009). Multiple media use is calculated as a weighted average of individual media use across the ten media included in Studies 1 and 2

(section 4.2). Guided by the procedure in Robinson and Kalafatis (2019), seven media are selected for subsequent analyses. Radio, video games, texting, music, social media, television and internet are included in the MMI calculations in Study 1 and Study 2.

## **5.2 Study 1**

### *5.2.1 Measurement or outer model*

Loadings for the operationalisations of locomotion and assessment are between .621 and .825. As a result of three scale item loadings being  $<.7$ , purification is deemed necessary. Following the removal of one item from assessment and two items from locomotion, loadings are all  $>.7$ . Following purification, all composite reliability ( $\rho_c$ ) and average variance extracted (AVE) indices exceed the corresponding benchmarks of .70 and .50 (Fornell and Larcker, 1981). The square root of each construct's AVE is notably higher than its bivariate correlations with the other constructs (Fornell and Larcker, 1981); none of the heterotrait-monotrait ratio interference values are greater than .85 ( $HTMT_{interference}$ ) and outer loadings with the intended construct are higher than cross loadings with other constructs, hence discriminant validity is confirmed. For reasons of brevity, the full results are available on request.

### *5.2.2 Structural or inner model*

Testing of the inner model reveals that both locomotion,  $.175 (2.54)^{**}$  and assessment,  $.275 (4.54)^{**}$  are significant positive determinants of multiple media use, although the explanatory power of the model is deemed weak ( $R^2 = .154$  and  $R^2 \text{ Adj. } .148$ ) (Hair *et al.*, 2017). Predictive relevance is satisfactory ( $Q^2 = .136$ ) and the SRMR value of .056 is below the recommended benchmark of .8. The significant functional relationship between the regulatory mode orientations of locomotion and assessment and multiple media use provides the requisite confirmation to proceed to the focal study.

## **5.3 Study 2**

### *5.3.1 Measurement or outer model*

The largest and smallest loadings for the operationalisations of the P-MMU dimensions are .966 and .693 respectively, meeting the commonly accepted benchmark of .7 (when rounded to one decimal place). For the operationalisations of locomotion and assessment,

loadings between .865 and .636 are found. Following limited purification (removing three scale items for locomotion and two for assessment), remaining item loadings > .7. Using the same benchmarks as Study 1, the psychometric properties of the constructs are met (Appendix 3). Collinearity criteria are met, with all values < 3.

### 5.3.2. Structural or inner model – mediation (Model 1)

In testing for mediation, the procedure follows Hair *et al.* (2017, p.228-243). With an R<sup>2</sup> value of .565, the mediation model reveals moderate explanatory power (Hair *et al.*, 2017). Predictive relevance is confirmed (Q<sup>2</sup> > 0). The SRMR value of .053 is below the recommended .08 benchmark. Table 1 indicates that the direct and indirect media effects of assessment and locomotion on multiple media use are significant. The simultaneous testing of all indirect pathways, from locomotion and assessment through the P-MMU dimensions to multiple media use, indicates that the P-MMU dimensions are significant mediators of locomotion and assessment.

Table 1 Mediation analysis - direct and indirect

	Direct effect	Indirect effect
Assessment -> multiple media use	.184 (2.97)**	.167 (2.90)**
Locomotion -> multiple media use	.134 (2.17)*	.143 (2.27)*

Note: \* $p < .05$  \*\* $p < .01$

Focussing on specific indirect effects, only three of the eighteen pathways are significant: locomotion -> social benefit -> multiple media use (.042, 1.73\*), assessment -> competence -> multiple media use (.107, 3.08\*\*\*) and locomotion -> information -> multiple media use (-.063, 2.42\*\*). For assessment and locomotion orientations, the direct effects are significant in addition to the indirect (or mediating) effects on multiple media use, signifying partial mediation (Zhao *et al.*, 2010). Full results for all included indirect pathways are available on request.

### 5.3.3 Structural or inner model – moderation (Model 2)

To test the moderating effects of regulatory mode, the approach recommended by Sharma *et al.* (1981) is applied, comparing results from the analytical models (Table 2). The base model establishes the direct effects. In the intermediary model, the direct effects of the regulatory mode orientations (locomotion and assessment) are added to the base model, representing a reduced version of the moderation model. All models are evaluated in terms of their respective explanatory powers and significance of functional relationships. The

following criteria are used to interpret the results: (1) if the coefficients of the interaction terms in the moderation model are zero, while the coefficients of the main effects of regulatory mode in the intermediary and moderation models are significantly different from zero, regulatory mode is not a moderator (but a determinant); (2) if the coefficients of the interaction terms in the moderation model are significantly different from zero, but the main effects of regulatory mode in the intermediary and moderation models are zero, regulatory mode is a pure moderator; or (3) if the coefficients of the interaction terms in the competing model are significantly different from zero and the main effects of regulatory mode in the intermediary and competing models are significantly different from zero, regulatory mode is classified as a quasi-moderator. Table 2 presents the results for these three models.

#### *5.3.3.1 Base model*

Testing of the base model reveals moderate explanatory power (Hair *et al.*, 2017); the Adj  $R^2$  is close to  $R^2$ , indicating no overfitting. There is no evidence of collinearity between the P-MMU dimensions (with all VIF values below 3) and predictive relevance is confirmed ( $Q^2 > 0$ ). The SRMR value is below the recommended .08 benchmark. Five of the nine dimensions of the P-MMU are significant determinants of multiple media use.

#### *5.3.3.2 Intermediary model*

The results for the intermediary model also indicate moderate explanatory power (Hair *et al.*, 2017). Results indicate no evidence of collinearity between the dimensions (all VIF values below 3), and predictive relevance is confirmed ( $Q^2 > 0$ ). The SRMR value is below the recommended .08 benchmark. Adding regulatory mode orientations to the model leads to a significant improvement in explanatory power. The same five dimensions of the P-MMU are significant determinants of multiple media use. For regulatory mode, the assessment orientation is revealed as a significant determinant, but locomotion is not.

#### *5.3.3.3 Moderation model*

Testing of the moderation model reveals substantial explanatory power (Hair *et al.*, 2017). No evidence of collinearity is indicated between the dimensions (all VIF values below 3), and predictive relevance is confirmed ( $Q^2 > 0$ ). The SRMR value is below the recommended .08 benchmark. The inclusion of regulatory mode as a moderator in the structural model results in an improvement in explanatory power in relation to the base and intermediary models. The assessment orientation of regulatory mode moderates four P-MMU

dimensions, while locomotion is a moderator of two. Applying the interpretation rules (5.3.3), assessment is identified as a quasi-moderator, as both the direct and interaction effects are significant. Locomotion is interpreted as a pure moderator, as only the interactions are significant.

Table 2: Base, intermediary and moderation analytical models

	<b>Base: ONLY the P-MMU dimensions</b>	<b>Intermediary: P-MMU dimensions PLUS RM components as direct determinants (intermediary)</b>	<b>Moderation: P-MMU dimensions PLUS RM components as direct determinants PLUS moderation</b>
<b>Assimilation</b>	-.047 (0.72)	-.033 (0.50)	-.030 (0.45)
<b>Social benefit</b>	.157 (2.09)*	.169 (2.15)*	.082 (1.09)
<b>Comfort</b>	.090 (1.19)	.079 (0.92)	.132 (1.54)
<b>Compulsive</b>	.334 (5.19)***	.256 (3.89)**	.281 (3.62)***
<b>Convenience</b>	.065 (0.91)	.066 (0.91)	.058 (0.78)
<b>Effective</b>	.137 (2.32)*	.133 (2.42)**	.102 (1.50)
<b>Gratification</b>	.142 (1.75)*	.156 (2.17)*	.221 (2.82)**
<b>Information</b>	-.200 (2.17)*	-.236 (2.27)*	-.260 (2.57)**
<b>MMC pref.</b>	.073 (1.16)	.110 (1.56)	.051 (0.69)
<b>Assessment</b>		.161 (3.10)**	.143 (2.20)*
<b>Locomotion</b>		-.065 (1.00)	-.070 (0.99)
<b>Assessment *</b>			
<b>Assimilation</b>			.128 (1.88)*
<b>Social benefit</b>			-.0008 (0.09)
<b>Comfort</b>			-.238 (2.65)**
<b>Compulsive</b>			-.003 (0.04)
<b>Convenience</b>			.315 (3.75)***
<b>Effective</b>			.060 (0.87)
<b>Gratification</b>			-.227 (2.92)**
<b>Information</b>			.001 (0.09)
<b>MMC pref.</b>			-.050 (0.62)
<b>Locomotion *</b>			
<b>Assimilation</b>			.157 (1.87)*
<b>Social benefit</b>			-.017 (0.22)
<b>Comfort</b>			.012 (0.11)
<b>Compulsive</b>			-.057 (0.73)
<b>Convenience</b>			-.084 (1.15)
<b>Effective</b>			.021 (0.26)
<b>Gratification</b>			.057 (0.59)
<b>Information</b>			-.200 (1.93)*
<b>MMC pref.</b>			.029 (0.29)
<b>R<sup>2</sup>; Adj. R<sup>2</sup>, SRMR; Q<sup>2</sup></b>	.568; .549; .050; .517	.593; .570; .055; .519	.679; .627; .054; .519
<b>F vale ΔR<sup>2</sup> (df)</b>		6.08 (2, 198)**	2.68 (18, 180)**

\*p < .05 \*\*p < .01 \*\*\* p < .001

## 6.0 Discussion

Extending research in the previously established functional relationship between preference and multiple media use, the integration of motivation (represented by regulatory mode) provides insights into why individuals multitask with media. Competing conceptualisations of the location of regulatory mode in this relationship are proposed, where preference mediates the relationship between regulatory mode and multiple media use (Model 1) and regulatory mode moderates the relationship between preference and multiple media use (Model 2). Testing differences in explanatory power ( $R^2$ ), the moderation model (Model 2) establishes  $R^2 = .679$  and the mediation model (Model 1),  $R^2 = .565$ . A significant difference is found in favour of Model 2 ( $F$  value  $\Delta R^2, 8.04^{***}$ ). The moderation model is therefore adopted; the results of the moderation analytical model (Table 2) guide the following debate. Using the method in Carrión *et al.* (2016), the similarity of the corresponding  $R^2$  values for the training and holdout samples of .683 and .708 indicate predictive validity.

### 6.1 Theoretical contributions

Previous empirical work establishes precursors to multiple media use, identifying five themes (Robinson and Kalafatis, 2019) discussed in Section 1.0. Although Robinson and Kalafatis (2019) establish a link between the dimensions of polychronicity and multiple media use, confirming differential preferences among individuals, their study falls short of explaining the underlying mechanisms of the identified differences. A theoretically justified mechanism to explain such differences is motivation, as found in the consumer behaviour literature (for example, Hirschman and Holbrook, 1982; Dhar *et al.*, 2000). To the best of the author's knowledge, this is the first study to integrate motivation (represented by regulatory mode) into the relationship between preference and the act of multiple media use. By providing support for the moderating effects of regulatory mode, this study contributes to our understanding of the underlying mechanisms of multiple media use, affording an explanation of why individuals choose to multitask with media.

Consideration of the findings of this study in relation to previous literature in the domain of multiple media use is informative. Results in this study reveal the P-MMU dimensions of emotional gratification, compulsive - addictive and information and knowledge as significant drivers of multiple media use, supporting previous empirical work in the multiple media use domain (Bardhi *et al.*, 2010; Wang and Tchernev, 2012; Kononova and Chiang, 2015; Robinson and Kalafatis, 2017; 2019). A direct comparison of the findings of this study



with the recent study by Robinson and Kalafatis (2019), reveals that both identify the emotional gratification, compulsive - addictive and information and knowledge dimensions as significant drivers of multiple media use. In Robinson and Kalafatis (2019), additional significant determinants of multiple media use include: social benefits, assimilation and comfort with multitasking. It is speculated that the differences in the P-MMU dimensions determining multiple media use are due to the different combinations of media sampled in each study. This finding represents the first substantial contribution to knowledge in the domain of multiple media use, guiding future research initiatives. Future empirical work should include all P-MMU dimensions, as omitting dimensions may lead to confounding research effects. For similar reasons, a comprehensive range of media alternatives should also be included in future investigations of multiple media use.

Analysis of the direct effects of the regulatory mode orientations reveals that assessment is a significant determinant of multiple media use, but locomotion is not (Table 2). The finding that locomotion is not significant is at odds with the (one) previous study in the multitasking context (Pierro *et al.*, 2013). However, it is important to note that Pierro *et al.* (2013) only included the locomotion orientation in their study (assessment was not measured). The regulatory mode theory literature indicates that although locomotion and assessment can be considered as distinct orientations, it is found that the orientations co-exist (Higgins *et al.*, 2003; Pierro *et al.*, 2018). Given the suggested co-existence, the sole use of locomotion may explain the differing findings, as inclusion of only one of the orientations may incorrectly amplify the effects of regulatory mode. Another explanation is that there are inherent differences in the organisational (the focus of Pierro *et al.*, 2013) and consumer media multitasking contexts. The suggestion that context differentially impacts the regulatory mode orientations represents the second contribution of the paper. Researchers must be cognisant of issues associated with generalisability when examining the effects of regulatory mode in different contexts.

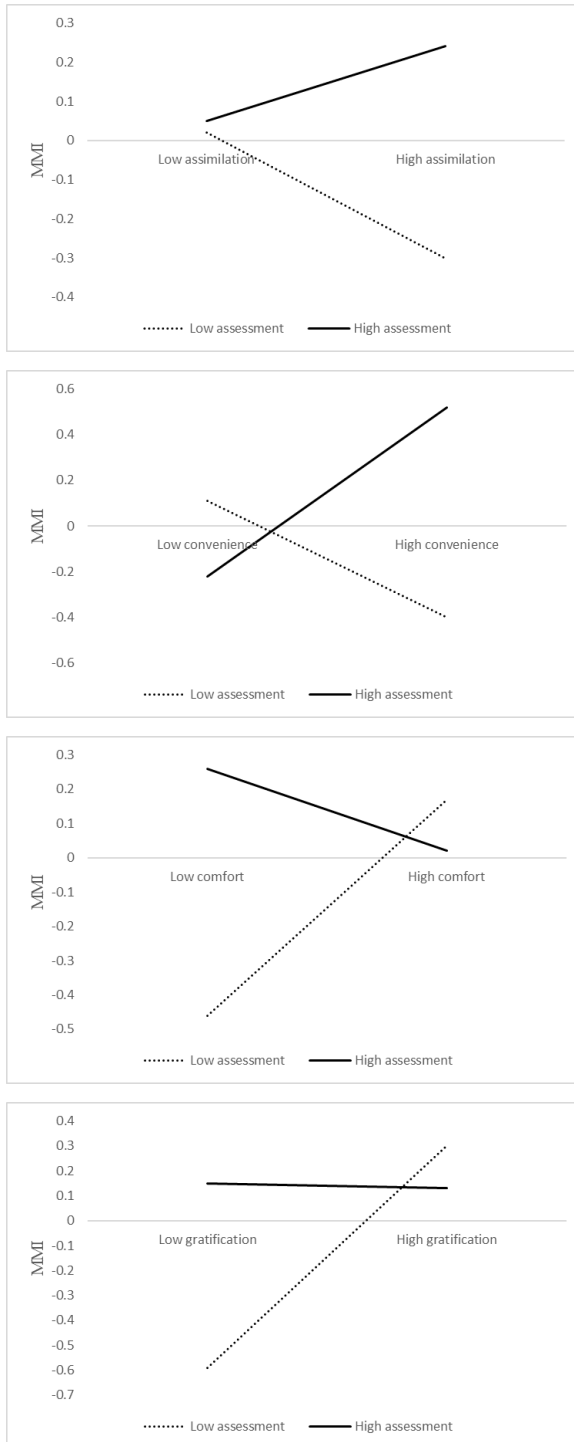
The moderating effects of regulatory mode in the relationship between the P-MMU dimensions and multiple media use represent the third noteworthy contribution to the multiple media use literature. Table 2 indicates that assessment moderates assimilation, comfort, convenience and gratification, while locomotion moderates assimilation and information. Inspection of the pathways moderated by assessment and locomotion reveal differential interaction patterns (Figures 3 and 4). Explanations for the differing patterns are informed by considering the specific features of each of the P-MMU dimensions in relation to the characteristics of the assessment and locomotion orientations. Figure 3

indicates that at low levels of assimilation, there is little difference in multiple media use between individuals with high or low assessment. However, for individuals high on assimilation, multiple media use is considerably higher for those scoring highly on assessment. The assimilation dimension is epitomised by the preference to filter media content to make sense of, absorb and manage media information (Robinson and Kalafatis, 2017). Given such a preference, individuals' self-regulation of multiple media use, through assimilation of media alternatives, is consistent with the inherent evaluative nature of the assessment orientation (Higgins *et al.*, 2003; Pierro *et al.*, 2018). Thus, the notably higher multiple media use by those high on assessment. In a broadly similar pattern, at low levels of convenience there is little difference in multiple media use between high assessors and low assessors. However, for individuals who show high preference for convenience and score high on assessment, multiple media use is higher. An explanation is found in aspects of the convenience dimension which represents individuals' preference for ease of navigation through various media in different locations during multiple media use (Robinson and Kalafatis, 2017). In seeking convenience, individuals are motivated to evaluate available media alternatives. The role of the assessment orientation, with its inherent comparison of options (Higgins *et al.*, 2003; Pierro *et al.*, 2018) aligns with the desire to achieve a convenient multiple media portfolio (Robinson, 2017).

Interaction patterns for comfort and gratification oppose those for assimilation and convenience. At high levels of comfort, there is little difference in multiple media use between individuals with high or low assessment. But at low levels of comfort and high levels of assessment, multiple media use is higher. An explanation for this pattern lies in the features of the comfort dimension, in which preference for multiple media use is characterised by competent, habitual, natural and comfortable behaviour (Robinson and Kalafatis, 2017). For those comfortable with media multitasking, the need to evaluate alternatives is reduced, as indicated by the low assessment levels (Higgins *et al.*, 2003; Pierro *et al.*, 2018). The pattern for gratification indicates that at high assessment levels, there is no difference between high and low gratification, with no difference in multiple media use. Examining the specific aspects of the gratification dimension reveals that it is characterised by a preference for enjoyment, relaxation and feeling good during multiple media use (Robinson and Kalafatis, 2017). It is suggested that a desire for personal gratification (Katz *et al.*, 1973) rather than rational judgement guide preference in relation to the emotional gratification dimension; hence, the motivation to evaluate alternatives, indicated by the assessment orientation (Higgins *et al.*, 2003), is low. At low assessment

levels, high gratification levels are associated with higher multiple media use, chosen to fulfil the desire for enjoyment and relaxation.

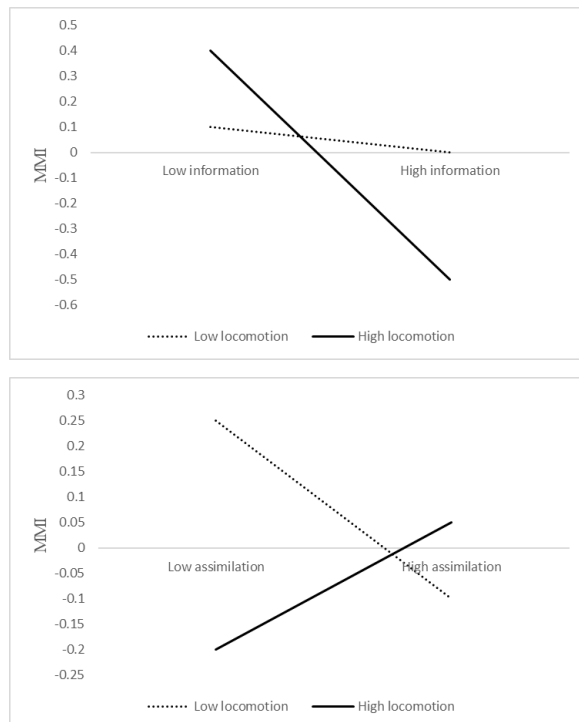
**Figure 3: Significant interactions - assessment orientation**



The moderating effects of the locomotion orientation are portrayed in Figure 4. The interaction pattern for assimilation indicates that at high assimilation levels, there is little difference between high and low locomotion on levels of multiple media use. However, at

low levels of assimilation, the differences between high and low locomotion on multiple media use are greater. In seeking to explain the pattern, the detailed elements of the assimilation dimension are instructive, in conjunction with the characteristics of the locomotion orientation. The characteristics of assimilation suggest that it is plausible that this preference dimension is influenced by the motivation to keep moving from one thing to another, typified by the locomotion orientation (Higgins *et al.*, 2003; Pierro *et al.*, 2013; Pierro *et al.*, 2018). Hence, at high levels of locomotion and assimilation, multiple media use is also higher. In contrast, the pattern for information and knowledge reveals that at low levels of locomotion and low information, there is little difference in multiple media use, whereas, at a high level of locomotion and information, the differences in multiple media use are more pronounced. Inspection of the information and knowledge dimension reveals a desire to gain information, knowledge and different points of view through multiple media use (Robinson and Kalafatis, 2017). It is reasoned that such features suggest a more considered, rational approach to multiple media use, akin to the characteristics of the 'Information seekers' segment in the MMU-T (Robinson and Kalafatis, 2019). Such preferences oppose the inherent features of the locomotion orientation, to just keep moving from one thing to another (Higgins *et al.*, 2003; Pierro *et al.*, 2018), providing a clear rationale for such a pattern.

**Figure 4: Significant interactions - locomotion orientation**



Collectively, these findings extend the work of Robinson and Kalafatis (2019), providing explanations for the established P-MMU to multiple media use pattern effects, through the introduction of regulatory mode orientations. Future research should account for individuals' motivation to self-regulate their multiple media use through regulatory mode orientations, providing an enhanced degree of sensitivity when investigating the determinants of multiple media use.

## *6.2 Managerial implications*

Important insights are also highlighted for media practitioners in the field of marketing communications and advertising. Contemporary media consumption is epitomised by the multiple media use of consumers, who actively select a range of media channels appropriate to their individual needs to form personal media multitasking portfolios (Robinson, 2017b). The fundamental precept of the media planning process is to gain the highest possible exposure to the chosen target audience (Danaher, 2007; Fill and Turnbull, 2019; Taylor *et al.*, 2013), by selecting an appropriate mix of media channels to meet brand objectives (De Pelsmaker *et al.*, 2018). To optimise media selection (by matching media to selected target audiences effectively and efficiently), syndicated media research sources are regularly analysed by media practitioners to ascertain demographic breakdowns, basic brand details and media information to inform and support media planning decisions. However, such data provision is criticised by media practitioners as 'too broad and too shallow to yield detailed insights which can inspire imaginative media solutions' (Michaelides, 2000, p.27). The findings from this study support such claims, ascertaining that the determinants of multiple media use are complex. Hence, when procuring media research sources, it is recommended that the enhanced understanding of the motivation and preferences for multiple media use from this study are applied in addition to syndicated sources, to augment media planning decisions.

Modern methods of media selection emphasise the importance of examining the role of consumers' relationships with media (Percy and Rosenbaum-Elliott, 2016). Programmatic channel planning and buying, concentrating on behavioural data, centres on the audience (Fill and Turnbull, 2019). Focussing on the audience, this study is informative, providing a detailed understanding of individuals' motivation and preferences for multiple media use. To maximise the benefits of channel planning tools, when matching media to target

audiences, practitioners must first gain a detailed understanding of the audience (Percy and Rosenbaum-Elliott, 2016), before proceeding to select the most appropriate media combination. The discovery that the assessment and locomotion orientations of regulatory mode theory moderate individuals' differing preferences for multiple media use, offers important new insights into the consumer-media relationship. The evidence provided by the significant interaction effects between the P-MMU preference dimensions and self-regulatory motivations of assessment and locomotion are instructive in providing a detailed understanding of the multiple media user. Yet, the latent nature of the P-MMU dimensions and self-regulatory motivations of assessment and locomotion, combined with the complexity of their interrelationships, create practical implementation challenges for media practitioners. To overcome such obstacles, the priority for practitioners is the identification of individual P-MMU preferences and assessment and locomotion orientations among the target audience. Media planners must find mechanisms to capture such information, through existing media audience data coupled with ad hoc research. For example, in digital media channels, user history and text mining can provide pointers towards individuals' motivations. The preferences of a selected target audience can be measured through the application of the P-MMU scale.

Once such information is identified, the detailed findings of this study could be applied to enhance the media planning process of matching appropriate combinations of media to a designated target audience. The new knowledge concerning individuals' motivation to self-regulate multiple media use through assessment and locomotion provides an added level of specificity to media audience segmentation. Once a detailed level of understanding of an audience is gained (Percy and Rosembaum-Elliott, 2016), accuracy of targeting among multiple media users can be enhanced through corresponding media selection. For example, in a hypothetical multi-media selection scenario for a high protein yoghurt drink aimed at a Digital Native audience, the interaction patterns for locomotion and assimilation are beneficial. The additional knowledge that the preference to assimilate media content through multiple media use is moderated by locomotion (the desire to keep moving from one thing to another) is instructive. The characteristics of the locomotion motivation emphasise the importance of selecting media combinations which allow easy movement from one medium to another, such as television and internet channels. For this scenario, the selected media channels enable easy movement from medium to medium, thus enhancing the multiple media user experience.

In summary, the confirmation that known preferences for multiple media use (Robinson and Kalafatis, 2017) are self-regulated by the assessment of media alternatives and the propensity to move from medium to medium (locomotion), provides potential additional knowledge for planners of multi-media campaigns. To improve multi-media planning decisions, through more precise targeting and appropriate media selection, it is recommended that the specific insights of this study are adopted by media practitioners. In consequence, individual multiple media consumption experiences are enhanced, thus enabling the synergistic benefits of multi-media campaigns (Binet and Field, 2007; Naik and Raman, 2003; Broadbent, 2011).

### *6.3 Limitations and future research*

While this study makes a valuable contribution to knowledge in the area of multiple media use, limitations are evident. The data collection involved opt-in samples, managed by a professional list broker. Despite every effort to maximise panel effectiveness, in using this method, sample bias and non-response are outside the control of the researcher. In addition, media use is self-reported rather than actual behaviour. Although procedures were implemented to reduce randomisation bias and all scale items and dimensions of the regulatory mode orientations of locomotion and assessment and polychronicity were randomised during the surveys; the study employed cross-sectional self-completion questionnaires, which may result in systematic sequence bias.

Digital Native (born after 1980) samples are chosen for the study as this group contains the most prevalent multiple media users (for example, Carrier *et al.*, 2009; Segijn *et al.*, 2017). However, it is recommended that future research should investigate Digital Immigrants (born before 1980), to compare their motivations and preferences for multiple media use. Two-way media combinations (for example, TV and social media) were investigated during our research, but future studies should also incorporate three-way combinations of media, such as TV, social media and text messaging. In doing so, increased complexity and additional media combinations may be included. This study was limited to a U.K. sample, whereas future empirical work should include additional countries, with probable differences in media technology advancement and culture.

A notable contribution to knowledge is made by this study, establishing the relationship between preference, motivation and multiple media use and confirming that regulatory

mode represents a motivation for individuals' preferences for multiple media use. Nevertheless, future research should examine additional motivations. As highlighted earlier in the paper, the literature reveals other personal traits associated with multiple media use; for example, sensation seeking (Duff *et al.*, 2014; Jeong and Fishbein, 2007; Kononova and Chiang, 2015; Yang and Zhu, 2016), creativity (Duff *et al.*, 2014), immersive tendency (Rubenking, 2016) and impulsivity (Yang and Zhu, 2016). However, to date, the possible motivation of personality is not yet investigated in the context of multiple media use. Hence, extending the confirmed model, by embedding personality as an additional motivation for the preference to multitask with media, is advocated.

## 7.0 References

- Barbopoulos, I. and Johansson, L-O. (2017) 'The Consumer Motivation Scale: Development of a multi-dimensional and context -sensitive measure of consumption goals.' *Journal of Business Research*, 76, pp.118-126. doi: 10.1016/j.jbusres.2017.03.012
- Bardhi, F., Rohm, A.J. and Sultan, F. (2010) 'Tuning in and tuning out: media multitasking among young consumers.' *Journal of Consumer Behaviour*, 9, pp. 316-332. doi: 10.1002/cb.320
- Benjamin, L. and Flynn, F.J. (2006) 'Leadership style and regulatory mode: Value from fit?' *Organisational Behaviour and Decision Processes*, 100, pp.216-230. doi: 10.1016/j.jobhdp.2006.01.008
- Binet, L. and Field, P. (2007) '*Marketing in the era of accountability.*' Henley on Thames; World Advertising Research Centre/ IPA.
- Broadbent, T. (2011) 'Channel Planning: effectiveness lies in channel integration.' *Admap* January.
- Carrier, L.M., Cheever, N.A., Rosen, L.D. Benitez, S. and Chang, J. (2009) 'Multitasking across generations: Multitasking choices and difficulty ratings in three generations of Americans.' *Computers in Human Behaviour*, 25, pp. 483-489. doi: 10.1016/j.chb.2008.10.012
- Carrier, L.M., Rosen, L. D., Cheever, N.A. and Lim, A.F. (2015) 'Causes, effects and practicalities of everyday multitasking.' *Developmental Review*, 35, pp. 64-78. doi: 10.1016/j.dr.2014.12.005.0273-2297
- Carrion, G.C., Hensler, J., Ringle, C.M. and Roldan, J.L. (2016) 'Prediction-oriented modeling in business research by means of PLS path modeling: Introduction to a JBR special section.' *Journal of Business Research*, 69 (10), pp.4545-4551. doi.org/10.1016/j.jbusres.2016.03.048
- Chernikova, M., Lo Destro, C., Mauro, R., Pierro, A. and Higgins, E.T. (2016) 'Different strokes for different folks: Effects of regulatory mode complementarity and task complexity on performance.' *Personality and Individual Differences*, 89, pp.134-142. doi: 10.1016/j.paid.2015.10.011



- Danaher, P. (2007) 'Media Planning.' In: *The Sage Handbook of Advertising*. Edited by Tellis, G.J. and Ambler, T., London: Sage.
- Delbridge, K.A. (2000) *Individual differences in multitasking ability: Exploring a nomological network*. Unpublished Doctoral dissertation, Michigan State University, East Lansing.
- De Pelsmaker, P., Geuens, M. and Van Den Bergh, J. (2018) *Marketing Communications: A European Perspective.* 6<sup>th</sup> Ed. Harlow England; Pearson.
- Dhar, R. and Wertonbroch, K. (2000) 'Consumer Choice between Hedonic and Utilitarian Goods.' *Journal of Marketing Research*, 37 (1), pp.60-71. doi: 10.1509/jmkr.37.1.60.18718
- Duff, B., Yoon, G., Wang, Z. and Anghelcev, G. (2014) 'Doing It All: An Exploratory Study of Predictors of Media Multitasking.' *Journal of Interactive Advertising*, 14 (1), pp. 11-23. doi: 10.1080/15252019.2014.884480
- Fitzsimons, G.M. and Bargh, J.A., (2004) Automatic self-regulation. In R.F. Baumeister and K.D. Vohs (Eds.) *Handbook of self-regulation: Research, theory and application*, pp. 151-170. New York; Guildford Press.
- Fill, C. and Turnbull, S. (2019) *Marketing Communications: touchpoints, sharing and disruption*. 8<sup>th</sup> Ed. Harlow England; Pearson.
- Foehr, U.G. (2006) 'Media Multitasking Among American Youth: Prevalence, predictors and pairings'. Available at: <http://faculty.ithaca.edu/jpowers/docs/SenSemReadings/mediamultitasking.pdf> (Accessed 26 June 2013)
- Fornell, C. and Larcker, D.F. (1981) 'Evaluating structural equation models with unobservable variables and measurement error.' *Journal of Marketing Research*, 18, pp. 39-50. doi: 10.1177/002224378101800104
- Fullerton, R.A. (2013) 'The birth of consumer behaviour: motivation research in the 1940s and 1950s.' *Journal of Historical Research in Marketing; Bingley*, 5 (20), pp.212-222. doi: 10.1108/17557501311316833
- Garcia, D., Jimmefors, A., Mousavi, F., Adrianson, L. Rosenberg, P. and Archer, T. (2015) 'Self-regulatory mode (locomotion and assessment), well-being (subjective and psychological), and exercise behaviour (frequency and intensity) in relation to high school pupils' academic achievement.' *PeerJ* 3:e847. doi: 10.7717/peerj.847
- Giacomantonio, M., Mannetti, L., and Pierro, A. (2013) 'Locomoting towards well-being or getting tangled in a material world: Regulatory modes and affective well-being.' *Journal of Economic Psychology*, 38, pp.80-89. doi: 10.1016/j.joep.2012.07.003
- Hair, J.F. JR., Hult, G.T.M, Ringle, C.M. and Sarstedt, M. (2017) *A Primer on Partial Least Squares Structural Equation Modeling. (PLS-SEM)*, 2<sup>nd</sup> ed., London: Sage Publications.
- Higgins, E.T., Kruglanski, A.W. and Pierro, A. (2003) 'Regulatory mode: locomotion and assessment as distinct orientation.' *Advances in Experimental Social Psychology*, 35, pp.294-345. doi: 10.1016/S0065-2601(03)01005-0
- Hirschman, E.C. and Holbrook, M.B. (1982) 'Hedonic Consumption: Emerging Concepts, Methods and Propositions.' *Journal of Marketing*, 46 (3), pp.92-101. doi: 10.1177/002224298204600314

- Hoyle, R.H., Stephenson, M.T., Palmgreen, P., Lorch, E.P. and Donohew, R.L. (2002) 'Reliability and validity of a brief measure of sensation seeking.' *Personality and Individual Differences* 32, pp.401-414. doi: 10.1016/S0191-8869(01)00032-0
- Hwang, Y., Kim, H. and Jeong, S-H. (2014) 'Why do media users multitask? Motives for general, medium specific and content specific types of multitasking.' *Computers in Human Behaviour*, 36, pp.542-548. doi: 10.1016/j.chb.2014.04.040
- Imrak, C. Vallen, B. and Sen, S. (2010) 'You Like What I Like, But I Don't Like What You Like: Uniqueness Motivations in Product Preferences.' *Journal of Consumer Research*, 37 (3), pp.443-455. doi: 10.1086/653139
- Jasmand, C., Blazevic, V. and Ruyter, K. (2012) 'Generating sales while providing service: A study of customer service representatives' ambidextrous behavior.' *Journal of Marketing*, 76 (1), pp20-37. doi: 10.1509/jm.10.0448
- Jeong, S-H. and Fishbein, M. (2007) 'Predictors of Multitasking with Media: Media Factors and Audience Factors.' *Media Psychology*, 10 (3), pp.364-384. doi: 10.1080/15213260701532948
- Katz, E., Gurevitch, M. and Hass, H. (1973) 'On the use of the mass media for important things.' *American Sociological Review*, 38, pp.164-181. doi: 10.2307/2094393
- Kononova, A. and Chiang, Y-H (2015) 'Why do we multitask with media? Predictors of media multitasking among Internet users in the United States and Taiwan.' *Computers in Human Behaviour*, 50, pp.31-41. doi: 10.1016/j.chb.2015.03.052
- Kruglanski, A.W., Thompson, E. P., Higgins, E.T., Atash, M.N., Pierro, A. and Shah, J.Y. (2000) 'To "do the right thing" or "just do it": Locomotion and assessment as distinct self-regulatory imperatives.' *Journal of Personality and Social Psychology* 79 (5), pp.793-815. doi: 10.1037/0022-3514.79.5.793
- Kruglanski, A.W. and Higgins, E.T. (2007) 'Regulatory mode and leadership styles: How fit increases job satisfaction.' *Basic and Applied Social Psychology* 29 (2), pp.137-149. doi: 10.1080/01973530701331700
- Kruglanski, A.W., Pierro, A., Mannetti, L. and Higgins, E.T. (2013) 'The distinct psychologies of "looking" and "leaping": Assessment and locomotion as the springs of action.' *Social and Personality Psychology Compass*, 7 (1) pp.79-92. doi: 10.1111/spc3.12015
- Lavidge, R.J. and Steiner, G. A. (1961) 'A model for predictive measurements of advertising effectiveness.' *Journal of Marketing*, 25, (4) pp.59-62. doi: 10.1177/002224296102500611
- Lee, L., Amir, O. and Ariely, D. (2009) 'In Search of Homo Economicus: Cognitive Noise and the Role of Emotion in Preference Consistency.' *Journal of Consumer Research*, 36, August: pp.173-187. doi: 10.1086/597160
- Manetti, L., Pierro, A., Higgins, E.T. and Kruglanski, A.W. (2012) 'Maintaining physical exercise: How locomotion moderates the full attitude-intention-behaviour relationship.' *Basic and Applied Social Psychology*, 34 (4) pp.295-303. doi: 10.1080/01973533.2012.693442
- Mathmann, F., Higgins, E.T., Chylinski, M. and de Ruyter, K. (2017) 'When Size Matters: Sensitivity to Missed Opportunity Size Increases with Stronger Assessment.' *Personality and*

- Social Psychology Bulletin*, 43 (10), pp.1427-1439. doi: 10.1177/0146167217717244journals.sagepub.cpm/home.pspb
- Mathmann, F., Chylinski, M., de Ruyter, K. and Higgins, T. (2017). 'When Plentiful Platforms Pay Off: Assessment Orientation Moderates the Effect of Assortment Size on Choice Engagement and Product Valuation.' *Journal of Retailing*, doi: 10.1016/j.jretai.2017.02.001
- Michaelides, G. (2000) 'Street Wise', *Admap*, May, pp.27.
- Naik, P.A. and Raman, K. (2003) 'Understanding the impact of synergy in multimedia communications.' *Journal of Marketing Research*, 40 (4), pp.375-388. doi: 10.1509/jmkr.40.4.375.19385
- Ophir, E. Nass, C and Wagner, A.D. (2009) Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences of the United States of America* 106, 37; pp.15583-15587. 10.1073/pnas.0903620106
- Oswald, F.L. Hambrick, D.Z. and Jones, L.A. (2007) 'Keeping all the plates spinning: Understanding and predicting multitasking performance'. In D.H Jonassen (Ed.) *Learning to solve complex scientific problems*.
- Panno, A., Lauriola, M. and Pierro, A. (2015) 'Regulatory mode and risk-taking: The mediating role of anticipated regret.' *PLoS One* 10 (11). doi: 10.1371/journal.pone.0143147
- Panno, A., Pierro, A., and Lauriola, M. (2014) 'Self-regulation predicts risk-taking through people's time horizon.' *International Journal of Psychology* 49 (3), pp.211-215. doi: 10.1002/ijop.12026
- Percy, L. and Rosebaum-Elliott, R. (2016) *Strategic Advertising Management*. 5<sup>th</sup> ed. Oxford: University Press.
- Pierro, A., Presaghi, F. and Higgins, E.T. (2009) 'Regulatory mode preference for autonomy supporting versus controlling instructional styles.' *British Journal of Educational Psychology* 79, pp. 599-615. doi: 10.1348/978185409X412444
- Pierro, A., Giacomantonio, M., Pica, G., Kruglanski A.W. and Higgins, E.T. (2011) 'On the psychology of time in action: Regulatory mode orientations and procrastination.' *Journal of Personality and Social Psychology*, 101 (6) pp.1317-1331. doi: 10.1037/a0025943
- Pierro, A., Giacomantonio, M., Mannetti, L., Higgins, T.E. and Kruglanski A.W. (2012) 'Leaders as planners and movers: Supervisors regulatory modes and subordinates' performance.' *Journal of Applied Psychology* 42 (10), pp.2564-2585. doi: 10.1111/j.1559-1816.2012.00953.x
- Pierro, A., Giacomantonio, M., Pica, G., Kruglanski A.W. and Higgins, E.T. (2013) 'Locomotion and the preference for multi-tasking: Implications for well-being.' *Motivational Emotions*, 37, pp.213-223. Doi: 10.1007/s11031-012-9300-y
- Pierro, A., Chernikova, M., Lo Destro, C., Higgins, E.T. and Kruglanski, A.W. (2018) 'Assessment and Locomotion Conjunction: How *Looking* Complements *Leaping* ... but not always.' *Advances in Experimental Psychology*, 58, pp.243-299. doi: 10.1016/bs.aesp.2018.02.001

- Pilotta, J.J., Shultz, D., Drenik, G and Rist, P. (2004) 'Simultaneous media usage: a critical consumer orientation to media planning.' *Journal of Consumer Behaviour*, 3 (3), pp.285-292. doi: 10.1002/cb.141
- Pilotta, J.J. and Shultz, D. (2005) 'Simultaneous Media Experience and Synesthesia.' *Journal of Advertising Research*, 45 (1), pp.19-26. doi: 10.1017/s0021849905050087
- Prensky, M. (2001) 'Digital Natives, Digital Immigrants.' *On the Horizon*, Vol. 9 (5) pp.1-6 Available from: <http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf> [Accessed: 26 March 2013].
- Ringle, C.M., Wende, S. and Becker, J-M. (2015), *SmartPLS3*, Bönningstedt: SmartPLS. Retrieved from <http://www.smartpls.com>
- Robinson, H. (2016) 'Multiple media use, polychronicity and multitasking: A review of literature and proposed research directions.' *The Marketing Review*, 16 (2), pp.129-147. doi: 10.1362/146934716X14636478977476
- Robinson, H.R. (2017a) 'Individuals' preference for multiple media use - underlying motives.' *Qualitative Market Research: An International Journal*, 20(4), pp.435-451. doi: 10.1108/QMR-06-2016-0056
- Robinson, H.R. (2017b) 'Towards an enhanced understanding of the behavioural phenomenon of multiple media use.' *Journal of Marketing Management*, 33, 9-10, pp.699-718. doi: 10.1080/0267257X.2017.1328457
- Robinson, H.R. and Kalafatis, S.P. (2017) 'The 'Polychronicity – Multiple Media Use' (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.' *Journal of Marketing Management*, 33, 17-18, pp.1421-1442. doi: 10.1080/0267257X.2017.1383297
- Robinson, H.R. and Kalafatis, S.P. (2019) 'Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.' *Journal of Advertising Research*, Digital First, (12), pp.1-20. doi: 10.2501/JAR-2019-045
- Rosen, L.D., Carrier, L.M. and Cheever, N.A. (2013) 'Facebook and texting made me do it: Media induced task switching while studying.' *Computers in Human Behaviour*, 29, pp.948-958. doi: 10.1016/j.chb.2012.12.001
- Rubening, B. (2016) 'Multitasking with TV: Media Technology, Genre and Audience Influences.' *Communication Research Reports*, 33 (4), pp.324-331. doi: 10.1080/08824096.2016.1224167
- Segijn, C.M., Voorveld, H.A.M., Vanderberg, L., Pennekamp, S.F. and Smit, E.G. (2017) 'Insight into everyday media use with multiple screens.' *International Journal of Advertising*, 36 (5), pp.779-797. doi: 10.1080/02650487.2017.1348042
- Sharma, S., Durand, R.M. and Gur-Arie, O. (1981) 'Identification and Analysis of Moderator Variables.' *Journal of Marketing Research*, 18 (3), pp.291-300. doi: 10.1177/002224378101800303
- Sok, K.M., Sok, P. and De Luca, L.M. (2016) 'The effect of "can do" and "reason to" motivations on service-sales ambidexterity.' *Industrial Marketing Management*, 55 (2), pp.144-155. doi: 10.1016/j.indmarman.2015.09.001

- Srivastava, J., Nakazawa, M. and Chen, Y. (2016) 'Online, mixed and offline media multitasking: Role of cultural, socio-demographic, and media factors.' *Computers in Human Behaviour*, 62, pp.720-729. doi: 10.1016/j.chb.2016.04.0400747-5632
- Taylor, J., Kennedy, R., McDonald, C., Laruinat, L., Ouarzazi, L. and Haddad, N. (2013) 'Is the Multi-media Platform Whole More Powerful Than Its Separate Parts? Measuring Sales Effects of Cross-Media Advertising.' *Journal of Advertising Research* 53, (2), pp. 200-211. doi: 10.2501/JAR-53-2-200-211
- Van der Walle, S. Steijn, B., and Jilke, S. (2015) 'Extrinsic motivation, PSM and labour market characteristics: a multilevel model of public sector employment preference in 26 countries.' *International Review of Administrative Sciences*, 81 (4) pp.833-855. doi: 10.1177/0020852314563899
- Wang, Z. and Tchernev, J.M. (2012) 'The "Myth" of Media Multitasking: Reciprocal Dynamics of Media Multitasking, Personal Needs, and Gratifications.' *Journal of Communication* 62, (3), pp. 493-513. doi: 10.1111/j.1460-2466.2012.01641.x
- Whitley, S.C., Trudel, R. and Kurt, D. (2018) 'The Influence of Purchase Motivation on Perceived Preference Uniqueness and Assortment Size Choice.' *Journal of Consumer Research*, 45, (4) pp.710–724. doi:10.1093/jcr/ucy031
- Yang, X. and Zhu, L. (2016) 'Predictors of media multitasking in Chinese adolescents.' *International Journal of Psychology*, 51, (6) pp.430-438. doi: 10.1002/ijop.12187
- Zhao, X., Lynch, J.G. and Chen, Q. (2010) 'Reconsidering Baron and Kenny: Myths and truths about mediation analysis.' *Journal of Consumer Research*, 37, pp.197-206. doi: 10.1086/651257

## **Appendix 1: Regulatory mode theory scale items**

### **Locomotion orientation:**

I don't mind doing things even if they involve extra effort. (1) <sup>1,2</sup>

I am a 'workaholic'. (2) <sup>2</sup>

I feel excited just before I am about to reach a goal. (3) <sup>1,2</sup>

I enjoy actively doing things, more than just watching and observing. (4)

I am a 'doer'. (5)

When I finish one project, I don't wait before starting on a new one. (6)

When I decide to do something, I can't wait to get started. (7)

By the time I accomplish a task, I already have the next one in mind. (8)

I am a 'high energy' person. (9)

Most of the time my thoughts are occupied with the task I wish to accomplish. (10)

When I get started on something, I usually persevere until I finish it. (11)

I am a 'go-getter'. (12)

### **Assessment orientation:**

I always evaluate my social interactions with others after they occur. (1) <sup>1,2</sup>

I spend a great deal of time thinking about my positive and negative characteristics. (2)

I like evaluating other people's plans. (3)

I often compare myself with other people. (4)

I spend a lot of time thinking about how others could improve themselves. (5)

I often critique work done by myself and others. (6)

I often feel that I am being evaluated by others. (7)

I am a critical person. (8)

I am very self-critical and self-conscious about what I am saying. (9) <sup>2</sup>

I often think that other people's choices and decisions are wrong. (10)

I always analyse the conversations that I have had with others after they occur. (11)

When I meet a new person, I usually evaluate how well he or she is doing on various dimensions (e.g. looks, achievements, social status, clothes) (12)

<sup>1</sup> Items removed from Study 1 during scale purification

<sup>2</sup> Items removed from Study 2 during scale purification

## Appendix 2 - P-MMU Scale items

### Comfort with MMU:

I feel comfortable when I am media multitasking  
For me, multitasking with media is habitual behaviour  
Media multitasking is something which comes naturally to me  
I'm just good at multitasking with media.

### Compulsive addictive:

I feel a constant compulsion to multitask with media  
Multitasking with media is compulsive  
Media multitasking is addictive; \*

### Multi-media channel preference:

I like switching back and forth between different media  
I like to juggle between media; I like to do more than one media activity at a time  
I like having multiple streams of media stimulation.

### Convenience:

It is easy to navigate between media when I am multitasking  
Media multitasking is effortless with portable devices  
Technology nowadays makes media multitasking effortless  
It is easy to multitask with media in many different locations.

### Emotional gratification:

Media multitasking is enjoyable  
Media multitasking makes me feel good  
I multitask with media to relax  
Multitasking with media keeps me company.

### Social benefits:

Multitasking with media gives me a sense of belonging  
Media multitasking helps me feel available for my friends and family  
When I multitask with media, I feel closer to other people  
Media multitasking helps me to feel connected with my friends and family.

### Effectiveness and efficiency:

I can get more done when I multitask with media  
Multitasking with media makes me more productive  
Media multitasking saves me time  
Media multitasking helps me get things done quickly.

### Information and knowledge:

When media multitasking, I can get instant access to information  
Media multitasking allows me to see the 'bigger picture'  
Media multitasking gives me different points of view  
I multitask with media so that I can gain knowledge.

### Assimilation:

Media multitasking helps me to filter media content  
Multitasking with media helps me to make sense of information  
Multitasking helps me absorb the media bombarded at me  
Media multitasking helps me to manage information.

\* Item removed during scale purification

### Appendix 3: Reliability and validity indices

	Asses	assim	ben	comf	Compl	conv	eff	grat	inf	loco	Multi	pref	AVE	CR
asses	<b>0.759</b>	0.309	0.338	0.180	0.377	0.182	0.254	0.311	0.257	0.294	0.351	0.164	0.575	0.931
assim	0.28	<b>0.858</b>	0.515	0.263	0.291	0.447	0.335	0.727	0.604	0.504	0.241	0.280	0.736	0.918
ben	0.319	0.467	<b>0.919</b>	0.611	0.659	0.420	0.648	0.649	0.358	0.364	0.595	0.692	0.844	0.956
comf	0.18	0.241	0.578	<b>0.939</b>	0.659	0.493	0.669	0.358	0.091	0.255	0.586	0.756	0.882	0.968
compl	0.354	0.26	0.608	0.614	<b>0.918</b>	0.365	0.694	0.462	0.060	0.218	0.703	0.654	0.843	0.942
conv	0.175	0.391	0.384	0.452	0.332	<b>0.842</b>	0.365	0.581	0.249	0.494	0.386	0.460	0.708	0.907
eff	0.25	0.312	0.618	0.645	0.653	0.349	<b>0.962</b>	0.362	0.097	0.170	0.604	0.622	0.925	0.980
grat	0.277	0.624	0.577	0.321	0.403	0.492	0.328	<b>0.822</b>	0.578	0.506	0.418	0.444	0.676	0.893
inf	0.214	0.472	0.314	0.042	0.042	0.164	0.073	0.474	<b>0.835</b>	0.406	0.048	0.136	0.697	0.901
loco	0.29	0.475	0.358	0.251	0.219	0.448	0.172	0.47	0.342	<b>0.778</b>	0.150	0.226	0.605	0.932
multi	0.346	0.227	0.578	0.573	0.67	0.368	0.596	0.383	0.064	0.171	<b>1</b>	0.592	1	1
pref	0.158	0.254	0.648	0.715	0.603	0.416	0.593	0.394	0.213	0.213	0.573	<b>0.916</b>	0.839	0.954

Note: Diagonal bold are square roots of AVE. Below the diagonal elements are bivariate correlations; above the diagonal are HTMT values.



**PART C: Theoretical contributions, managerial implications, future research and limitations.**

**C.1 Foreword**

The thesis addresses the limited, emergent and descriptive nature of previous empirical work in the domain of multiple media use, exposed in the initial review of literature. Seeking explanations for multiple media use, the initial step involves the exploration of the range of dimensions of preference for multiple media use. The uncovered dimensions form the basis for the development and testing of a new multidimensional scale to measure preference for multiple media use. The new scale is then applied to investigate the effects of the dimensions of preference on multiple media use and the subsequent examination of motivation in the final study.

Concluding the overall study to investigate the underlying preferences, key drivers and underpinning motivations of individuals multiple media use, theoretical contributions of the studies in Papers 1 - 5 (*c.f.* Table 1, p.11) are discussed sequentially. The implications of the findings of the programme of research for marketing communications and media practitioners are considered, with accompanying recommendations. The limitations of the overall study are acknowledged, and future research directions are proposed, to continue empirical work in the expanding research domain of multiple media use. As these points are previously considered in each paper, the role of the final chapter is to draw together the main themes, toward the conclusion of the thesis.

**C.2 Theoretical contributions of the overall programme of research.**

At the outset of the research, the review of literature in Paper 1 offers an effective synopsis of existing research in the domain of multiple media use. The review exposes a paucity of empirical work and an absence of theoretical underpinning in extant literature, highlighting a gap in research and a clear research opportunity to advance knowledge in relation to this complex behavioural phenomenon. A notable contribution of Paper 1 is the identification of the relevance of the concepts of polychronicity and multitasking, representing a point of departure from which to embark on the investigation of multiple media use. Contributing to future work in the domain of multiple media use, the paper offers a clearly articulated

set of future research directions, starting with the need for a context specific multidimensional measure of polychronicity.

Forming the initial phase of empirical work to develop a new scale to measure polychronicity 'the preference for multiple media use', the search for an understanding of the underlying dimensions of polychronicity in Paper 2 considerably advances our knowledge. Whereas previous empirical work is fragmented, examining only selected antecedents of multiple media use, this study contributes the first detailed and wide-ranging assembly of the underlying preferences of individuals for multiple media use. Appreciably expanding the findings of Bardhi *et al.* (2010), who identified the 'benefits' of efficiency, assimilation, control and engagement; the comprehensive exploratory study through the lens of polychronicity in Paper 2, reveals a full range of distinct dimensions of polychronicity in the multiple media context. A number of additional factors are uncovered in this study, to reveal eight underlying preference dimensions: comfort with multitasking, multi-media channel preference, effectiveness and efficiency, convenience, emotional gratification, information and knowledge, social benefits and assimilation. Furthermore, granular detail is afforded by the multiple associated facets of each dimension (*c.f.* Paper 2, Figure 1, p.51). In consequence, the study makes a notable contribution to our appreciation of the breadth and depth of individuals' preference for multiple media use. This paper contributes to the development of theory through the new insights provided by the eight dimensions of preference, offering clarification of the meaning of the concept of polychronicity in the multiple media context.

Previous measures of preference in the consumer multitasking context (Kaufman-Scarborough and Lindquist, 1999; Lindquist and Kaufman-Scarborough, 2007) lack the necessary breadth and depth of understanding of individuals preference for multiple media use to capture the complexity of the phenomenon. Addressing the gap in knowledge, Paper 3 documents the development of a new scale to measure polychronicity, the preference for multiple media use. Analyses in Paper 3 provide empirical support for the eight conceptualised dimensions derived from the prior appraisal of literature in Paper 1 and the qualitative study in Paper 2. Contributing to our understanding of the intricacies of the complex behavioural phenomenon of multiple media use, the nine dimensions closely mirror those uncovered in Paper 2. Further detail is afforded through the associated facets of each of the nine dimensions (*c.f.* Paper 3, Table 11, p.83). The primary contribution of the empirical study in Paper 3 is the provision of the 'Polychronicity - Multiple Media Use'

(P-MMU) scale, as an apt measure for use by future researchers in the emerging domain of multiple media use. The nine-dimensional P-MMU scale contributes a granular platform from which to examine multiple media use, offering a superior level of detail lacking in previous measures of preference. A granular approach is considered preferable to an overall conceptualisation, which risks hiding differential multiple media use, leading to the possibility of confounding effects.

Having established the dimensions of the P-MMU, the new scale is applied in Paper 4 to examine the causal relationship between polychronicity and multitasking, investigating the nine dimensions of the P-MMU as drivers of multiple media use. The initial contribution of the study is delivered at a general level, where the findings in the domain of multiple media use are found to align with the assertion of consumer behaviour theory that preference precedes behaviour (Lavidge and Steiner, 1961). Nevertheless, the discovery of the asymmetric impact of the P-MMU dimensions on multiple media use identifies heterogeneity in these functional relationships, leading to the portioning of respondents into three distinct segments and the determination of the drivers of multiple media use for each segment. Paper 4 is the first to examine the effects of the dimensions of preference on multiple media use and the only empirical study to demonstrate heterogeneity in this relationship. While previous empirical work has identified preference in connection with media multitasking (Kononova and Chiang, 2015; Rubenking, 2016; Srivastava *et al.*, 2016), Paper 4 determines the need for a multidimensional conceptualisation of preference when examining this complex behavioural phenomenon. Theoretically, the study emphasises the importance of considering individuals' preferences when examining multiple media use and contributes to knowledge by determining the differential effects of the dimensions of preference on multiple media use. The findings indicate that omitting to account for heterogeneity may lead to theoretical mismatch by failing to acknowledge the underlying complexity of the preference to behaviour relationship in the multiple media use domain. Each of the three segments emphasises a different set of preference dimensions, leading to the formation of a unique typology, the MMU-T, comprising 'Information seekers', 'Connecteds' and 'Instinctives' (*c.f.* Paper 4, Table 10, p.110). Although user typologies for individual media forms are found in the literature (Brandtzaeg, 2010; Shao *et al.*, 2015), this study provides the first known typology of multiple media users. The MMU-T progresses beyond basic user groupings by identifying the underlying preferences for multiple media use, offering new insights into the complexities of the phenomenon. A further notable contribution to knowledge is provided through the identification of distinct patterns of

multiple media use among 'Information seekers', 'Connecteds' and 'Instinctives' (*c.f.* Paper 4, Table 11, p.110), elaborating on previous empirical work in which multiple media use is treated as a 'single behaviour' (Rubenking, 2016; Srivastava *et al.*, 2016). Omitting to account for the distinct differences among the three segments, runs the risk of confounding findings.

While Paper 4 ascertains the link between the dimensions of polychronicity and multiple media use, confirming differential preferences among individuals, the underpinning mechanisms to explain such differences are not yet addressed. Emanating from the consumer behaviour literature (Hirschman and Holbrook, 1982; Dhar *et al.*, 2000), motivation offers a theoretically based mechanism to explain such differences. Progressing the findings of Paper 4; Paper 5 investigates the underlying motivation for multiple media use, examining the effects of the regulatory mode orientations of assessment and locomotion. Paper 5 is the first known study to integrate motivation into the relationship between preference and the act of multiple media use. The findings extend the empirical work in Paper 4, through the introduction of the regulatory mode orientations, contributing theoretically grounded explanations for the established differential patterns.

Analysis of the direct effects of the regulatory mode orientations on multiple media use oppose the only previous study of multitasking behaviour, conducted in an organisational setting (Pierro *et al.*, 2013). It is contended that the differences are due to the different contexts of the two studies. Contributing to the regulatory mode literature, it is posited that context differentially impacts regulatory mode and that future researchers must exercise caution when generalising results from different contexts. However, the focal contribution of Paper 5 is formed by the evidence of the moderating effects of regulatory mode in the relationship between the P-MMU dimensions and multiple media use, by offering (previously absent) explanations for individuals' multiple media use. To ensure an enhanced degree of precision in future investigations of multiple media use, researchers must take account of individuals' motivation to self-regulate their multiple media use through the regulatory modes of assessment and locomotion. Overall, the final study contributes the first documented account of the underpinning mechanisms of multiple media use, providing explanations as to why individuals multitask with media.

### **C.3 Implications for marketing communications practitioners.**

The continually fragmenting and rapidly developing media landscape, stimulated by constant technological developments, has implications for: advertisers, creative and media planners, media channel owners and consumers of media. Modern media consumption is characterised by individuals' use of multiple channels assembled by means of personal media multitasking portfolios (Robinson, 2017b). For the roles of marketing communications practitioner and media planner, responsible for planning and executing clients' campaigns, a thorough understanding of the complexities of multiple media use is desirable. Although the switching nature of media multitasking may be considered a threat, due to the possible avoidance of advertising by media consumers; the synergistic benefits of multiple media use (Binet and Field, 2007; Broadbent, 2011; Naik and Raman, 2003) offer an opportunity for marketing communications practitioners, on behalf of their clients. Pursuing this view, to attain the potential synergistic benefits of increased attention and engagement with marketing communication messages offered by multiple media use; communicators must ensure that a single message is received across a multi-media campaign (Scolari, 2009; Percy and Rosebaum-Elliott, 2016; Fill and Turnbull, 2019). Correspondingly, the fundamental principle of media planning; the optimal selection of media channels to achieve maximum exposure and impact among selected target audiences (Danaher, 2007; De Pelsmacker *et al.*, 2018; Taylor *et al.*, 2013), is applied. Augmenting the multi-media planning process, the contributions of the progressive findings of this study for practitioners include: a rich supplementary information source, a new measurement scale (P-MMU), a unique user typology (MMU-T) and an in-depth understanding of the motivation for multiple media use.

In pursuing optimal media selection, through matching appropriate media channels to target audiences, syndicated media research data are commonly utilised by media channel planners for demographic analysis, brand information and media intelligence. Yet, existing syndicated media research sources are often described by media practitioners as broad and superficial (Michaelides, 2000). Addressing the demand for depth and detail, the study offers a valuable source of supplementary information for planners of marketing communications campaigns, to complement existing syndicated media research sources. For example, when planning a multi-media campaign comprising a combination of television and social media; in striving to match media channels to a target audience effectively and efficiently, planners typically consult syndicated single media research

sources, to determine demographic information and the media habits of the target audience. Correspondingly, it is recommended that the depth and detail of understanding of individuals' preferences for multiple media use, provided by the eight dimensions and their associated facets in the qualitative study in Paper 2 (*c.f.* Paper 2, Figure 1, p.51), are adopted as a valuable supplementary source of media planning information. Embracing this knowledge, media planners are better informed to place messages accurately. Drilling down to the facets of the eight dimensions provides even greater depth of information; for example, specifically examining the emotional gratification dimension, the facets of 'relaxation', 'fun' and 'entertainment' are highlighted (*c.f.* Paper 2, Figure 1, p.51). Similarly, the advanced understanding provided by the nine established dimensions of the P-MMU scale (*c.f.* Paper 3, Table 11, p.83) should be applied by marketing communications practitioners to accurately brief creative and media planning teams, in turn producing creatively relevant and accurately placed messages for media multitasking audiences.

The specific and detailed understanding of the determinants of multiple media use for the 'Information seekers', 'Connecteds' and 'Instinctives' segments of the MMU-T (in Paper 4), provide a further supplementary multi-media planning resource. Once top-level media channel selections are in place, the application of the MMU-T provides an improved level of specificity and detail in the media planning process, enabling greater accuracy in targeting audiences. In Paper 5, the discovery that the known dimensions of preference for multiple media use (uncovered in Papers 2, 3 and 4) are self-regulated by the assessment and locomotion, provides valuable new knowledge for planners of multi-media campaigns. For media practitioners seeking to improve multi-media planning outcomes, it is recommended that the valuable supplementary knowledge of multiple media user preferences, drivers and motivation (contributed by Papers 2-5) are adopted for use as additional media planning resources.

The P-MMU scale, developed to provide a measure of individuals' preferences for multiple media use, provides a unique, multi-faceted, multidimensional tool (*c.f.* Paper 3, Table 11, p.83). The P-MMU contributes an extensive insight into media multitasking behaviour and provides a valuable measure for use by marketing communications and media practitioners. The nine-dimensional survey instrument is recommended for use in ad-hoc practitioner research, to investigate the preferences for multiple media use among individuals from selected target audience groups. For instance, it is recommended that the P-MMU is used by marketing communications practitioners researching audience

characteristics at the initial planning stages of an IMC campaign. Notably, the P-MMU scale is applied in the investigation of the drivers of multiple media use in Paper 4, in which a typology of multiple media users is discovered. The user typology, known as the MMU-T, comprises three distinct segments: 'Information seekers', 'Connecteds' and 'Instinctives'. Distinct patterns of multiple media use are identified for each segment, providing tangible benefits for planners of multi-media campaigns. The principal use of the MMU-T is to improve accuracy of targeting among Digital Native multiple media users, to maximise reach among this prominent audience. For multi-media campaign planners, the 'Instinctives' appear the most promising segment, as they use the majority of media combinations 'most of the time' (*c.f.* Paper 4, Table 11, p.111). 'Information seekers' demonstrate more selective multiple media use (using just two combinations 'most or some of the time'), while 'Connecteds' using several combinations 'a little of the time'. As an integral part of the media planning process, the benefit of the MMU-T becomes evident after top-level media selection, to improve accuracy in reaching the target audience. In Paper 4, a film release example aimed at Digital Natives is outlined, wherein a multi-media campaign including television, internet and social media is planned. The findings of the study reveal that the most appropriate MMU-T segment for such a campaign is the 'Instinctives'. By choosing appropriate media vehicles to gain the attention of the 'Instinctives', the synergistic benefits of the chosen multi-media combination are maximised. While this study concentrates on the Digital Native audience, as the largest group of multiple media users, additional audiences should also be considered in future work.

Contemporary media selection techniques highlight the importance of examining consumer-media interactions (Percy and Rosebaum-Elliott, 2016) and focus on the audience (Fill and Turnbull, 2019). Paper 5 is informative regarding audience understanding, offering a detailed investigation of individuals' underlying motivation and preferences for multiple media use. The exposure of the regulatory mode orientations of assessment and locomotion as moderators of the relationships between the dimensions of preference and multiple media use, offer a notable advance in understanding of the consumer-media interactions. Nevertheless, for media practitioners, there are practical implementation hurdles, due to the latent nature of the P-MMU dimensions and regulatory mode orientations, along with their complex interrelationships. To overcome these challenges, practitioners must first identify individual P-MMU preferences and regulatory mode orientations among their selected target audiences. Preference should be measured

through the application of the P-MMU scale among the selected target audience. It is recommended that media planners capture information on motivation through existing media audience data. For instance, in digital media channels, such information is forthcoming from user histories and text mining, which may provide indications of the multiple media user motivations of individuals.

#### **C.4 Research limitations and future research**

While the five papers make a notable contribution to knowledge in the emerging domain of multiple media use, it is important to acknowledge the limitations of the studies comprising the overall programme of research, before proposing future research directions. As a review of literature, Paper 1 is subject to the criticism of some, that the partiality of the researcher is present in the choice of included studies (Denyer and Tranfield, 2006). In this study, the limitation is minimised by adopting a planned and systematic approach to the selection of papers in the domain of multiple media use. The limitations of the study in Paper 2 are those associated with qualitative research techniques. Despite the application of quality criteria and triangulation methods, generalisability of the findings to a wider population relies on further testing. Data collection methods in the studies in Papers 3, 4 and 5 rely on the use of opt-in panels, managed by a professional list broker. In spite of the benefits of using online panels, the associated limitations are acknowledged. Their reliance on self-selected convenience samples means that sample bias and non-response are outside of the control of the researcher, leading to potential concerns around data quality (Lowry *et al.*, 2016; Chandler *et al.*, 2019). However, in Papers 3, 4 and 5, routine procedures are implemented by panel organisers to mitigate such shortcomings. Screening questions are incorporated to establish respondents' multiple media usage and the specific age category requirements of the studies, to ensure an even age spread within the Digital Native sample. During each survey, once the expected time taken for the survey is established in a test run, time checks are imposed to eliminate respondents who have completed the survey 'too quickly'. In addition, for all surveys a pilot is conducted; after completion by approximately 50 respondents, the survey is halted by the panel organisers to allow data quality checks to be conducted by the researcher, before the survey is restarted to collect the remainder of the data. Although issues associated with systematic sequence bias cannot be eliminated entirely, procedures to minimise such bias are implemented, including the randomisation of scale items and dimensions of all included



scales during each of the surveys. In Papers 4 and 5, it is noted that the media use for each medium is self-reported, rather than actual media behaviour, which could also be considered a limitation.

Studies in Papers 2 - 5 employ samples of Digital Natives (adults born after 1980, Prensky, 2001), chosen as the most prevalent group of multiple media users (Carrier *et al.*, 2009). Following the study in Paper 2, future qualitative research should include corresponding work among Digital Immigrants (adults born before 1980, Prensky, 2001), whose technology use has been learned later in life and for whom 'digital' is a second language (Prensky, 2001). The study in Paper 3, focussing on the development and validation of the P-MMU scale, requires further validation. It is recommended that the scale should be tested across different groups of individuals (such as Digital Immigrants) and in different countries with intrinsically different levels of media concentration, technological development, and cultural background. Similarly, future research among Digital Immigrants is also recommended in Paper 4, to determine whether the criteria linking the dimensions of polychronicity and multiple media use are the same or different. Such findings contain inherent implications for the structure of the MMU-T, among this alternative group of media multitaskers. For similar comparative purposes, it is also suggested that the research study in Paper 5 is replicated among Digital Immigrants, to determine whether the moderating effects of regulatory mode are present among an older group of media multitaskers.

While the qualitative study in Paper 2 encompassed two, three and even four-way combinations of multiple media use, for pragmatic reasons, in subsequent studies (Papers 3-5), media were limited to two-way combinations, such as watching television and using the internet. Future research should go further to include three-way media combinations, for example, television, social media and text messaging. By expanding the size of media combination, increased complexity, mirroring common media practice can be captured. Overall, the scope of empirical research in this study was confined to U.K. samples (except for some in-depth interviews in Paper 2). Future research should also be extended to investigate additional countries, with inherently different media concentration, technological development, and culture.

Each of the studies in the progressive programme of research in Papers 1 - 4 is informed by the future research recommendations of the preceding study. In the final study (Paper 5), following the contribution afforded by the confirmation of the role of regulatory mode as a

motivation in the relationship between preference dimensions and multiple media use, future research should investigate additional motivations. As highlighted in Paper 5, the literature exposes other personal traits linked with multiple media use; for instance, sensation seeking (Duff *et al.*, 2014; Jeong and Fishbein, 2007; Kononova and Chiang, 2015; Yang and Zhu, 2016), creativity (Duff *et al.*, 2014), immersive tendency (Rubenking, 2016) and impulsivity ( Yang and Zhu, 2016). Thus far, personality is not yet investigated as a motivation for multiple media use; it is recommended that the confirmed model in Paper 5 is extended, to embed personality as an additional motivation, to broaden explanations for individuals' multiple media use.

Revisiting the third research direction from Paper 1, the theory of threaded cognition (Salvucci and Taatgen, 2008) is proposed as a theoretical underpinning for the explanation of the mechanics of multiple media use. Threaded cognition is considered appropriate for the examination of multiple media use due to its flexibility in relation to a range of multitasking activities along the multitasking continuum (Salvucci and Taatgen, 2011). The theory can encompass multitasking combinations of two or more and is successfully applied in previous studies of differing multitasking settings (Salvucci and Taatgen, 2008). In two relatively recent studies of multitasking, threaded cognition is successfully applied as a theoretical framework (Wang *et al.*, 2012; Rosen *et al.*, 2013). Since threaded cognition is not aligned to a specific domain, it is considered appropriate for the study of multiple media use. It is envisaged that an experimental approach, employing eye tracking or neuro-tracking technology, will be appropriate, initially examining a prevalent media combination such as television, social media and text messaging.

## **PART D: References for the overarching document**

Academic Journal Quality Guide, Version 4 (2010) *ABS The Association of Business Schools*.

Academic Journal Quality Guide, Version 5 (2015) *ABS The Association of Business Schools*.

Agarwal, R. and Prasad, J. (1998). 'A conceptual and operational definition of personal innovativeness in the domain of information technology.' *Information Systems Research*, 9, pp.204–215.

Bagozzi, R.P. and Yi, Y. (1988) 'On the evaluation of structural equation models.' *Journal of the Academy of Marketing Science*, 16 (1), pp.74-94.

Baker, M.J. (2000) 'Writing a Literature Review'. *The Marketing Review*, pp.219-247.

Bardhi, F., Rohm, A.J. and Sultan, F. (2010) 'Tuning in and tuning out: media multitasking among young consumers.' *Journal of Consumer Behaviour*, 9, pp.316-332.

Bell, J. and Waters, S. (2014) *Doing your research project*. 6<sup>th</sup> ed. Maidenhead: Open University Press.

Binet, L. and Field, P. (2007) '*Marketing in the era of accountability*.' Henley on Thames; World Advertising Research Centre/ IPA.

Bluedorn, A. C., Kaufman, C. F. and Lane, P. M. (1992) 'How many things do you like to do at once? An introduction to monochronic and polychronic time'. *Academy of Management Executive*, 6 (4), pp.17-26.

Boeije, R.H. (2010) *Analysis in Qualitative Research*. 4<sup>th</sup> ed. Los Angeles: Sage.

Brandtzaeg, P. B. (2010) 'Towards a Unified Media-User Typology (MUT): A Meta-Analysis and Review of the Research Literature on Media-User Typologies.' *Computers in Human Behavior*, 26, pp.940-956.

Brasel, S. A. and Gips, J. (2011) 'Media multitasking behaviour: Concurrent television and computer usage.' *Cyber Psychology, Behaviour and Social Networking*, 14 (9), pp.527-534.

Broadbent, T. (2011) 'Channel Planning: effectiveness lies in channel integration.' *Admap* January.

Bryman, A. and Bell, E. (2011) *Business Research Methods*. 3<sup>rd</sup> ed. Oxford: Oxford University Press.

Bryman, A. and Bell, E. (2015) *Business Research Methods*. 4<sup>th</sup> ed. Oxford: Oxford University Press.

Carrier, L.M., Cheever, N.A., Rosen, L.D. Benitez, S. and Chang, J. (2009) 'Multitasking across generations: Multitasking choices and difficulty ratings in three generations of Americans.' *Computers in Human Behaviour*, 25, pp.483-489.

- Chandler, J., Rosenzweig, C., Moss, A.J., Robinson, J. and Litman, L. (2019) 'Online panels in social science research : Expanding sampling methods beyond Mechanical Turk.' *Behavior Research Methods*, 51, pp.2022-2038.
- Churchill, G. A. (1979). 'A paradigm for developing better measures of marketing constructs.' *Journal of Marketing Research*, 26, pp.64-73.
- Churchill, G.A. and Iacobucci, D. (2010) *Marketing Research: Methodological Foundations*. 10<sup>th</sup> ed. Mason, Ohio: South Western Cengage Learning.
- Creswell, J.W. and Plano Clark, V.L. (2011) *Designing and Conducting Mixed Methods Research*. 2<sup>nd</sup> ed. Thousand Oaks, CA: Sage.
- Crotty, M. (2003) *The Foundations of Social research*. Sage: London.
- Danaher, P. (2007) 'Media Planning.' In: *The Sage Handbook of Advertising*. Edited by Tellis, G.J. and Ambler, T., London: Sage.
- Delbridge, K.A. (2000) *Individual differences in multitasking ability: Exploring a nomological network*. Unpublished Doctoral dissertation, Michigan State University, East Lansing.
- Denyer, D. and Tranfield, D. (2006) 'Using qualitative research synthesis to build an actionable knowledge base.' *Management Decision*, 44 (2), pp.213-227.
- De Pelsmaker, P., Geuens, M. and Van Den Bergh, J. (2018) *Marketing Communications: A European Perspective*. 6<sup>th</sup> ed. Harlow England; Pearson.
- De Vaus, D.A. (2001) *Research Design in Social Research*. London: Sage.
- Dillman, D.A. (1983) *Mail and Other Self-administered Questionnaires* in Rossi, P.H., Wright and Anderson, A.B. (eds), *Handbook of Survey Research*. Orlando, Florida: Academic Press.
- DeVellis, R. F. (2003) *Scale development theory and applications, applied social research methods series volume 26*. 2nd ed. London: Sage.
- Dhar, R. and Wertonbroch, K. (2000) 'Consumer Choice between Hedonic and Utilitarian Goods.' *Journal of Marketing Research*, 37 (1), pp.60-71.
- Duff, B., Yoon, G., Wang, Z. and Anghelcev, G. (2014) 'Doing It All: An Exploratory Study of Predictors of Media Multitasking.' *Journal of Interactive Advertising*, 14 (1), pp.11-23.
- Field, A. (2009) *Discovering Statistics Using SPSS*. 3<sup>rd</sup> ed. London: Sage.
- Fill, C. and Turnbull, S. (2019) *Marketing Communications: touchpoints, sharing and disruption*. 8<sup>th</sup> ed. Harlow England; Pearson.
- Foehr, U.G. (2006) 'Media Multitasking Among American Youth: Prevalence, predictors and pairings.' Available at: <http://faculty.ithaca.edu/jpowers/docs/SenSemReadings/mediamultitasking.pdf> (Accessed 26 June 2013)
- Fornell, C. and Larcker, D.F (1981) 'Evaluating structural equation models with unobservable variables and measurement error.' *Journal of Marketing Research*, 18, pp.39-50.

- Gabbott, M. (2004) 'Undertaking a Literature Review in Marketing.' *The Marketing Review*, 4, pp.411-429.
- Girden, E.R. and Kabacoff, R.I. (2011) *Evaluating Research Articles from Start to Finish*. 3<sup>rd</sup> ed. London: Sage.
- Graham, R.J. (1981) 'The role of perception of time in consumer research.' *Journal of Consumer Research*, 7, pp.335-42.
- Guba, E.G. and Lincoln, Y.S. (1994) Competing Paradigms in Qualitative Research, in Denzin, N.K. and Lincoln, Y.S. (eds) *Handbook of Qualitative Research*. Thousand Oaks, Calif.: Sage.
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010) *Multivariate Data Analysis A Global Perspective*. 6<sup>th</sup> Ed. New Jersey: Pearson Education Inc.
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2013) *Multivariate Data Analysis*. 7<sup>th</sup> ed. London: Pearson.
- Hair, J.F. JR., Hult, G.T.M, Ringle, C.M. and Sarstedt, M. (2014) *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, London: Sage Publications.
- Hair, J.F. JR., Hult, G.T.M, Ringle, C.M. and Sarstedt, M. (2017) *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2<sup>nd</sup> ed. London: Sage Publications.
- Hart, C. (2011) *Doing a Literature Review*. London: Sage.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2015) 'A new criterion for assessing discriminant validity in variance-based structural equation modelling'. *Journal of the Academy of Marketing Science*, 43, pp.115-135.
- Higgins, E.T., Kruglanski, A.W. and Pierro, A. (2003) 'Regulatory mode: locomotion and assessment as distinct orientation.' *Advances in Experimental Social Psychology*, 35, pp.294-345.
- Hirschman, E.C. and Holbrook, M.B. (1982) 'Hedonic Consumption: Emerging Concepts, Methods and Propositions.' *Journal of Marketing*, 46 (3), pp.92-101.
- Hoyle, R.H., Stephenson, M.T., Palmgreen, P., Lorch, E.P. and Donohew, R.L. (2002) 'Reliability and validity of a brief measure of sensation seeking.' *Personality and Individual Differences* 32, pp.401-414.
- Jeong, S-H. and Fishbein, M. (2007) 'Predictors of Multitasking with Media: Media Factors and Audience Factors.' *Media Psychology*, 10 (3), pp.364-384.
- Katz, E., Gurevitch, M. and Hass, H. (1973) 'On the use of the mass media for important things.' *American Sociological Review*, 38, pp.164-181.
- Kaufman-Scarborough, C. F., and Lindquist, J. D. (1999) 'The polychronic attitude index: Refinement and preliminary consumer marketplace applications.' *American Marketing Association. Conference Proceedings*, 10, pp.151-157.
- Kock, N. and Lynn, G.S. (2012) 'Lateral Collinearity and Misleading Results in Variance-Based SEM: An Illustration and Recommendations.' *Journal of the Association for Information Systems*, 13 (7), pp.546-580.

- Kononova, A. and Chiang, Y-H (2015) 'Why do we multitask with media? Predictors of media multitasking among Internet users in the United States and Taiwan.' *Computers in Human Behaviour*, 50, pp.31-41.
- Konig, C.J., Oberacher, L., and Kleinmann, M. (2010) 'Personal and Situational Determinants of Multitasking at Work.' *Journal of Personnel Psychology*, 9 (2), pp.99-103.
- König, C.J. and Waller, M.J. (2010) 'Time for reflection: a critical examination of polychronicity.' *Human Performance*, 23 (2), pp.173-190.
- Kruglanski, A.W., Thompson, E. P., Higgins, E.T., Atash, M.N., Pierro, A. and Shah, J.Y. (2000) 'To "do the right thing" or "just do it": Locomotion and assessment as distinct self-regulatory imperatives.' *Journal of Personality and Social Psychology* 79 (5), pp.793-815.
- Lavidge, R.J. and Steiner, G. A. (1961) 'A model for predictive measurements of advertising effectiveness.' *Journal of Marketing*, 25, (4) pp.59-62.
- Lee, L., Amir, O. and Ariely, D. (2009) 'In Search of Homo Economicus: Cognitive Noise and the Role of Emotion in Preference Consistency.' *Journal of Consumer Research*, 36, August: pp.173-187.
- Lindquist, J. D., and Kaufman-Scarborough, C. (2007) 'The polychronic-monochronic tendency model PMTS scale development and validation'. *Time and Society*, 16 (2/3), pp. 253-285.
- Lowry, P.J., D'Arcy, J., Hammer, B. and Moody, D. (2016) "'Cargo Cult" science in traditional organization and information systems survey research: A case for using nontraditional methods of data collection, including Mechanical Turk and online panels.' *Journal of Information Systems*, 25, pp.232-240.
- Malholtra, N.K., Nunan, D. and Birks, D.F. (2017) *Market research: an applied approach*. 5<sup>th</sup> ed. Harlow: Pearson Education.
- Michaelides, G. (2000) 'Street Wise', *Admap*, May, pp.27.
- Miles, M.B. and Huberman, A. (1994) *Qualitative Data Analysis: An Expanded Sourcebook*. 2<sup>nd</sup> ed. London: Sage.
- Naik, P.A. and Raman, K. (2003) 'Understanding the impact of synergy in multimedia communications.' *Journal of Marketing Research*, 40 (4), pp.375-388.
- Nastasi, B.K., Hitchcock, J.H. and Brown, L.M. (2010) 'An inclusive framework for conceptualising mixed methods typologies.' in A. Tashakkori and C. Teddlie (eds) *The Sage Handbook of Mixed Methods in Social and Behavioural Research* 2nd ed. Thousand Oaks, CA: Sage.
- Netemeyer, R. G., Bearden, W. O., and Sharma, S. (2003). *Scaling procedures, issues and applications*. London: Sage.
- Ophir, E. Nass, C and Wagner, A.D. (2009) Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences of the United States of America* 106, 37; pp.15583-15587. 10.1073/pnas.0903620106

- Oppenheim, A. N. (2000) *Questionnaire Design, Interviewing and Attitude Measurement* (new ed). London: Continuum International.
- Oswald, F.L. Hambrick, D.Z. and Jones, L.A. (2007) 'Keeping all the plates spinning: Understanding and predicting multitasking performance'. In D.H Jonassen (Ed.) *Learning to solve complex scientific problems*.
- Palmer, D.K. and Schoorman, F.D. (1999) 'Unpacking the multiple aspects of time in polychronicity'. *Journal of Managerial Psychology*, 14 (3/4), pp.323-345.
- Percy, L. and Rosebaum-Elliott, R. (2016) *Strategic Advertising Management*. 5<sup>th</sup> Ed. Oxford: University Press.
- Pierro, A., Giacomantonio, M., Pica, G., Kruglanski A.W. and Higgins, E.T. (2013) 'Locomotion and the preference for multi-tasking: Implications for well-being.' *Motivational Emotions* 37, pp.213-223.
- Pierro, A., Chernikova, M., Lo Destro, C., Higgins, E.T. and Kruglanski, A.W. (2018) 'Assessment and Locomotion Conjunction: How *Looking* Complements *Leaping* ... but not always.' *Advances in Experimental Psychology*, 58, pp.243-299.
- Pilotta, J.J., Shultz, D., Drenik, G and Rist, P. (2004) 'Simultaneous media usage: a critical consumer orientation to media planning.' *Journal of Consumer Behaviour*, 3 (3), pp.285-292.
- Pilotta, J.J. and Shultz, D. (2005) 'Simultaneous Media Experience and Synesthesia.' *Journal of Advertising Research*, 45 (1), pp.19-26.
- Poposki, E. M. and F. L. Oswald (2010) 'The Multitasking Preference Inventory: Toward an Improved Measure of Individual Differences in Polychronicity.' *Human Performance*, 23, pp. 247-264.
- Prensky, M. (2001) 'Digital Natives, Digital Immigrants.' *On the Horizon*, Vol. 9 (5) pp.1-6 Available from: <http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf> [Accessed: 26 March 2013].
- Ragin, C. C. (2000) *Fuzzy-Set Social Science*. Chicago: The University of Chicago Press.
- Resher, N. (1995) *Pragmatism, The Oxford Companion to Philosophy*, Ed. Honderuch, T. Oxford University Press: Oxford, pp.710-13.
- Richie, J. and Lewis, J. (2003) *Qualitative Research Practice A Guide for Social Science Students and Researchers*. London: Sage.
- Robinson, H. (2016) 'Multiple media use, polychronicity and multitasking: A review of literature and proposed research directions.' *The Marketing Review*, 16 (2), pp.129-147.
- Robinson, H.R. (2017a) 'Individuals' preference for multiple media use - underlying motives.' *Qualitative Market Research: An International Journal*, 20 (4), pp.435-451.

- Robinson, H.R. (2017b) 'Towards an enhanced understanding of the behavioural phenomenon of multiple media use.' *Journal of Marketing Management*, 33 (9-10), pp.699-718.
- Robinson, H.R. and Kalafatis, S.P. (2017) 'The 'Polychronicity – Multiple Media Use' (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.' *Journal of Marketing Management*, 33, 17-18, pp.1421-1442.
- Robinson, H.R. and Kalafatis, S.P. (2019) 'Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.' *Journal of Advertising Research*, Digital First, (12) pp.1-20.
- Robinson, H. R. (2020) 'Regulatory Mode Theory - effects on multiple media use.' Submitted to *European Journal of Marketing*.
- Rosen, L.D., Carrier, L.M. and Cheever, N.A. (2013) 'Facebook and texting made me do it: Media induced task switching while studying.' *Computers in Human Behaviour*, 29, pp.948-958.
- Rubeking, B. (2016) 'Multitasking with TV: Media Technology, Genre and Audience Influences.' *Communication Research Reports*, 33 (4), pp.324-331.
- Salvucci, D.D., and Taatgen, N.A. (2008) 'Threaded Cognition: An integrated theory of concurrent multitasking.' *Psychological Review*, 115 (1), pp.101-130.
- Saunders, M., Lewis, P. and Thornhill, A. (2016) *Research Methods for Business Students* 7<sup>th</sup> ed. Harlow: Pearson.
- Scolari, C.A. (2009) 'Transmedia storytelling: implicit consumers, narrative worlds and branding in contemporary media production.' *International Journal of Communications*, 3, pp.86-606.
- Sekaran, U. (2003) *Research Methods for Business: A Skill-Building Approach*. Chichester West Sussex: Wiley.
- Sekaran, U. and Bougie, R. (2013) *Research methods for business: A Skill-Building Approach*. 6<sup>th</sup> ed. Chichester, West Sussex: Wiley.
- Sekaran, U. and Bougie, R. (2016) *Research methods for business: A Skill-Building Approach*. 7<sup>th</sup> ed. Chichester, West Sussex: Wiley.
- Shao, W., Ross, M. and Grace, D. (2015) 'Developing a Motivation-Based Segmentation Typology of Facebook Users.' *Market Intelligence & Planning*. 33, 7, pp.1071–1086.
- Silverman, D. (2011) *Interpreting Qualitative Data*. 4<sup>th</sup> ed. London: Sage.
- Srivastava, J. (2013) 'Media multitasking performance: Role of message relevance and formatting cues in online environments.' *Computers in Human Behaviour*, 29 (3), pp.888-895.
- Srivastava, J., Nakazawa, M. and Chen, Y. (2016) 'Online, mixed and offline media multitasking: Role of cultural, socio-demographic, and media factors.' *Computers in Human Behaviour*, 62, pp.720-729.



- Tabachnick, B.G. and Fidell, L.S. (2007) *Using Multivariate Statistics*. 5<sup>th</sup> ed. Boston: Pearson.
- Tashakkori, A. and Teddlie, C. (eds) (2010) *The Sage Handbook of Mixed Methods in Social and Behavioural Research*. 2nd ed. Thousand Oaks, CA: Sage.
- Taylor, J., Kennedy, R., McDonald, C., Larginat, L., Ouarzazi, L. and Haddad, N. (2013) 'Is the Multi-media Platform Whole More Powerful Than Its Separate Parts? Measuring Sales Effects of Cross-Media Advertising.' *Journal of Advertising Research* 53 (2), pp.200-211.
- Toracco, R.J. 'Writing Integrative Literature Reviews: Guidelines and Examples', *Human Resource Development Review*. 4 (3), pp.356-367.
- Voorveld, H.A.M. (2011) 'Media multitasking and the effectiveness of combining online and radio advertising.' *Computers in Human Behaviour*, 27 (6), pp.2200-2206.
- Wang, Z. and Tchernev, J.M. (2012) 'The "Myth" of Media Multitasking: Reciprocal Dynamics of Media Multitasking, Personal Needs, and Gratifications.' *Journal of Communication* 62 (3), pp.493-513.
- Wang, Z., David, P., Srivastava, J., Powers, S., Brady, C., D'Angelo, J., and Moreland, J. (2012) 'Behavioural Performance and visual attention in communication multitasking: A comparison between instant messaging and online voice chat.' *Computers in Human Behaviour*, 28 (3), pp.968-975.
- Whittemore, R. and Khafli, K. (2005) 'The integrative review: updated methodology.' *Journal of Advanced Nursing*, 52 (5), pp.546-553.
- Yang, X. and Zhu, L. (2016) 'Predictors of media multitasking in Chinese adolescents.' *International Journal of Psychology*, 51, (6) pp.430-438.
- Yardley, L. (2000) 'Dilemmas in qualitative health research.' *Psychology and Health*, 15 (2), pp.167-192.

## **PART E: Technical appendices - Papers 1 - 5**

The following technical appendices provide additional detail with respect to method, design and analysis not included in Papers 1 - 5. The supplementary materials provided for each technical appendix augment the level of detail provided in the papers (due to the word restrictions of the respective journals).

## **E1 Technical Appendix Paper 1**

### **Multiple media use, polychronicity and multitasking: a review of literature and proposed research directions.**

#### **Overview of the literature review process:**

An integrative review is defined as 'a form of research that reviews, critiques and synthesizes representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated' (Toracco, 2005, p.356). The integrative literature review is appropriate for this study due to its efficacy in amalgamating conceptual and empirical work from a variety of perspectives (Whittemore and Khafil, 2005). The five prescribed stages of an integrative literature review (Toracco, 2005) are followed:

#### **Stage 1 - Identify an appropriate topic or issue:**

A preliminary exploration of the focal topic area of multiple media use reveals the concepts of polychronicity and multitasking as related. Hence the identified topics are multiple media use, polychronicity and multitasking.

#### **Stage 2 - Justify why a literature review is the appropriate means of addressing the problem:**

Prior to embarking on the programme of research in the domain of multiple media use, a critical synthesis of existing literature is needed to identify research gaps which may lead to potential areas for further study (Baker, 2000; Gabbott, 2004; Denyer and Tranfield, 2006). In addition, a review of the multiple media use literature enables the identification of seminal research, other researchers in the domain, and previously employed methods and analytical techniques (Gabbott, 2004; Hart, 2011).

#### **Stage 3 - Search or retrieve the appropriate literature:**

The methods employed for the literature search broadly adhere to the procedure recommended in Bryman and Bell (2011, p.110) of: searching, reading, noting and identification of keywords. For the integrative review, initial keywords: multiple media, polychronic, polychronicity and multitasking (including and omitting the word media) are used. These keywords are broad enough to ensure adequate coverage of the area, while remaining focussed on the topic. The primary location of sources is from electronic databases through the Kingston University Library Systems, supported by search engines (for example, Google Scholar). The search process utilises citation searches and cross matching of references. Source materials include books, peer reviewed journals, doctoral theses and academic conference proceedings. The overriding criterion for the selection of literature is the condition that academic materials have been subject to a process of peer review, which applies to academic journal articles and academic conference proceedings. As a quality benchmark, the Association of Business Schools (ABS) Rankings Table (2010) is used, where 4 represents the highest quality and 1, the lowest. However, lower ranked journals are included in the review, as the domains of multiple media use and polychronicity have entered the academic arena relatively recently, and embryonic subject areas are often initiated in lower ranked journals. For similar reasons, academic conference

proceedings are also incorporated. Additions to the peer review process include carefully selected doctoral theses and books. Nevertheless, academic journal articles dominate the review, originating from several disciplines: psychology, human resources, education, technology and marketing as indicated in the list of references. The literature search was conducted at the outset of the programme of research and is time dependent. Due to the evolving nature of the domain of multiple media use, the key papers would be different if the search were conducted today.

Although a systematic approach to the search and selection of academic materials is applied, a census is not realistic, and sources of information are inevitably overlooked. The literature search is restricted to materials published in the English language, so those published in foreign languages are not included. In addition, certain unpublished literature or 'grey' sources are not captured through the formal search process.

Stage 4 - Analyse and critique the literature:

Analysis of the sourced academic materials for the integrative literature review process includes 'a continuous and iterative process' (Richie and Lewis, 2003, p.219). The Framework approach (Richie and Lewis, 2003), comprising: familiarisation, thematic framework, indexing, charting and interpretation is used for the review of literature, as it is suited to academic materials where synthesis and identification of themes is paramount. Initially, sourced academic materials are read to 'familiarise' the author with content. Analysis is conducted using a template adapted from Graham (1998), incorporating the 'seven essential features' of critiquing research articles: rationale, purpose, method - participants; apparatus; procedure, results and discussion (Girden and Kabacoff, 2011). A separate template form was created for each journal article uncovered during the literature search. Preliminary development of the 'thematic framework' is supported by use of the analysis templates to classify source materials into the main themes: media industry context, polychronicity, multitasking, cognitive psychology and measurement methods. Next, all source materials are analysed in depth, applying the template ('indexing'). Finally, charts are drawn in line with main themes, offering efficient organisation and synthesis of literature. Themes emerging from the 'charting' analysis and 'interpretation' phases form the structure for discussion of literature in Paper 1.

Stage 5 - Create new understandings through one or more forms of synthesis:

New understandings in the domain of multiple media use, polychronicity and multitasking, gained from the critical evaluation of literature, are discussed in detail in Paper 1, which concludes with specific recommended future research directions (*c.f.* Paper 1, p.36).

## **E2 Technical appendix Paper 2**

### **Individuals' preference for multiple media use – underlying motives.**

#### Qualitative research: Stage 1 Interviews and Stage 2 triads:

Prior to commencing any study, the research design must be considered in order to plan and ascertain appropriate collection, measurement and analysis of data (De Vaus, 2001; Sekaran and Bougie, 2016). The purpose of this study, to gain an in-depth understanding of the concept of polycronicity (the preference for multiple media use), indicates an exploratory research design (Sekaran, 2003), with associated implications for methods of data collection, sampling, measurement and analysis (*c.f.* Paper 2, p.439). Qualitative methods are considered appropriate for this exploratory study (*c.f.* Paper 2, p.439).

Qualitative research follows a 'continuous and iterative process' (Richie and Lewis, p.219), categorised by Miles and Huberman (1994) into: data collection, data reduction, data display and conclusion drawing and verification. Although these stages appear consecutive and convenient, each stage is iterative and interdependent on the other (Malhotra *et al.*, 2017). The analysis of qualitative data has attracted debate among academics. Three procedures for analysing qualitative data are proposed by Silverman (2011): content analysis, grounded theory and narrative analysis. Alternatively, Richie and Lewis (2003) recommend the 'Framework' approach, including several stages of analysis: familiarisation, thematic framework, indexing charting and interpretation. The chosen analysis procedure for this study, in the emerging domain of multiple media use, is rooted in the guiding principles of grounded theory (*c.f.* Paper 2, p.440). The use of coding and constant comparison allows the researcher to explore meanings and develop conclusions from the collected data (Malhotra *et al.*, 2017).

#### Stage 1: Individual interviews - U.K., Germany and Australia

##### Data collection:

A variety of research techniques are available to qualitative researchers, including: observation, ethnographic and interviewing methods (Bryman and Bell, 2011; Richie and Lewis, 2003). In Stage 1, individual interviews are selected, due to the complex nature of the behavioural phenomenon of multiple media use (*c.f.* Paper 2, p.439). 34 face-to-face in-depth interviews were conducted (using an interview guide) in the U.K. (12), Germany (12) and Australia (10), as detailed in Paper 2 (*c.f.* p.439). All interviews were audio tape recorded and transcribed verbatim. In Germany, interviews were conducted in German and backward translated into English. Following good practice, the research was conducted in accordance with the quality criteria recommended by Yardley (2000), as detailed in Paper 2 (p.440).

## **Interview guide: In-depth interviews**

### **Introduction**

**Introducing the researcher and the study:** I am investigating the behavioural phenomenon of multiple media use. I would like to talk to you about your *multiple media use* behaviour and your experiences when you are using more than one medium at a time or *media multitasking*. For example, when using two devices, such as watching a television while surfing the Internet and texting a friend; or one device - instant messaging while reading online news.

**Reminder of confidentiality:** I intend to audio record the interview, to make sure that I accurately gather your responses and to concentrate on what you are saying, rather than taking notes. However, your responses are confidential, and your comments will not be linked with your name in any publication of the findings. If you would like a summary of my findings, then please let me know and I can send them to you.

**TURN ON RECORDER & PHONE!**

### **Media consumption patterns:**

**First of all, could you tell me when (at what times) you tend to use media?**

Prompts: typical daily, weekly, weekend/ working day vs non-working day/time of day (morning, noon, afternoon, evening);

Prompts: what for? how long? how often?

**Which media do you use?**

Prompts:

Television (traditional/online)

Newspaper (print/online)

Magazines (print/online)

Radio

Internet (mobile/tablet/laptop)

Social media

Cinema/film streaming...Other...

**Which media devices do you own or use?**

Prompts:

Mobile/smartphone

ipod/ MP3

TV

Radio

Laptop/Tablet

Kindle type device

**Which combinations do you use when media multitasking?**

Prompt for:

Why this combination...

Common combinations...unlikely combinations

Single device/platform...Multiple devices/platforms

*Keep going until they cannot come up with any further combinations (note down/confirm each one)*

**Media multitasking experiences and situations:**

**What situations are you in when you are multitasking with media?**

Prompts:

Multitasking occasions

Equal attention to all or background/foreground media

Environment e.g. location - home or work

Alone or with others

**How do you manage you media multitasking?...how does it work in practice? Using examples, can you describe how you multitask with media?**

Prompts:

Switching vs simultaneous consumption

Switching...in-depth probing...estimated length of time between switches...

**Reasons for media multitasking (combinations):**

**Why do you prefer to multitask (with media)? Your main reasons for multitasking?**

Prompts:

Benefits

Disadvantages

Convenience

Efficiency

Habit...until reasons are exhausted, then ...

**Feelings surrounding media multitasking:**  
**How do you feel when you are multitasking with media?**

**Effects of media multitasking:**  
**What are the effects or outcomes of your media multitasking?**

Prompts:  
Good or bad thing  
Attention...

**Anything else...**  
**Is there anything else we have not covered?**  
Prompts: Anything to add on the subject of multiple media use – anything at all?  
**End of interview (TURN OFF RECORDERS)**  
Any further discussion...

Sampling design for Stage 1 follows the seven-step procedure outlined by Churchill and Iacobucci (2010).

Step 1 involves the identification of the target population - for this study multiple media users (*c.f.* Paper 2, P.439). Step 2 includes the identification of a sampling frame - in this case Digital Natives (born since 1980) (Prensky, 2001) are selected (*c.f.* Paper 2, p.439) as the most prevalent multiple media users (Carrier *et al.*, 2009).

Step 3 comprises the selection of participants from the research population. Two main approaches are commonly used: probability and non-probability sampling (Bryman and Bell, 2015). The use of probability sampling requires that all members of a sampling frame are given an equal opportunity of being selected (Malhotra *et al.*, 2017), whereas in non-probability sampling, members are purposefully (or judgementally) selected (Bryman and Bell, 2015). In this study, non-probability quota sampling is used, choosing participants in the U.K., Germany and Australia (*c.f.* Paper 2, p.439).

Step 4 involves the determination of sample size, which for this qualitative study included between 10 - 12 respondents per country (*c.f.* Paper 2, p.439). Step 5 actions the sampling process - in Stage 1 of this study, the samples were selected by the interviewers (under the guidance of the researcher. Step 6 involves the validation of the sample and was undertaken by the researcher.

Data reduction:

The reduction of data is achieved through an inductive approach (Bryman and Bell, 2015), organising and rearranging the data through the iterative stages of open, axial and selective coding (Boeije, 2010; Sekaran and Bougie, 2013; Malhotra *et al.*, 2017). The following three tables list the open codes generated from the analysis of 34 interview transcriptions for the U.K., Germany and Australia, drawing comparisons between the three countries.

## Open coding: U.K.

I feel effective when multitasking

Addictive behaviour

Overwhelmed with information from everywhere

Like to multitask

Don't like silence

Staying updated

Stay social

Keeping up with everything

A part of everyone's lives

I'm just good at multitasking

A welcome distraction

Having background noise

Everyone's developed multitasking skills – having so much media blasted at them

More information at once

Some people better at multitasking than others

Human engagement

Not even aware that multitasking sometimes

Switching

Not needing undivided attention

Technology allows multitasking

Efficient (time)

I like multiple streams of stimulation

I don't like just having one thing on at a time

Only one thing boring

Multiple media gives different points of view/ bigger picture

Bombarded with media, so have to assimilate somehow

Definitely it's wired our brains differently

Social pressure - social media

It helps me juggle

Its here, its available

Don't want to miss anything

Check information

Effective in hunting for information

Media multitasking habitual behaviour

Keeping up with the times

One thing at a time is boring

More than one thing (medium) if no need to focus

Media multitasking when alone/ avoiding boredom

Media multitasking in a situation where no need full attention

So many things going on

Portable media, you can carry them around

Habit forming ... addictive

Multitasking of not doing anything important

Depends on importance of task in hand

Depends which media one is multitasking with

Different media are different

Enjoyable to media multitask

Time effective

It is there so you use it

Media multitasking has become the norm

All there (social media), so I can use it when I want to

Very convenient



## Open coding: Germany

Want to be always available for friends  
Out of boredom  
Some kind of addiction  
Mindless  
Scared to miss out on something  
Easy way to communicate/ stay in touch with people  
Makes me feel relaxed, it's just fun  
Have to do something else at the same time  
To get more done, in not too much time  
I like to do several things at the same time  
Simply saves time  
More focussed with one medium (implying less focussed with one plus)  
Stay up to date, don't want to miss out on something (need for immediacy)  
Habit  
Deal with all things at once  
Up to date  
A useful distraction (enabling a break and re-focus on task)  
Not to miss anything important  
Social expectation for immediacy  
People can get in touch at any time  
Do more in the same time (time efficiency) get things done faster  
TV used as background for company (break silence)  
Calms my mind  
Kind of addiction  
Out of boredom (for entertainment)  
Nice to have background noise  
Feels effective (but does cause distractions)  
Dependency  
Makes things easier  
Relaxation  
A kind of compulsion  
To find out supplementary information  
To stay in touch with friends  
Background so feel less alone  
Relaxed atmosphere  
Isn't conducive to concentration (when concentration not needed)  
Time pressure  
Our generation don't focus on one thing any longer  
Boring to just watch TV  
Information quickly  
More information and different kinds of information at the same time  
Added value  
Improves efficiency for entertainment  
More fun  
In contact with friends at the same time (as watching TV)  
To get information 'in the same moment'  
Constant compulsion to receive information  
Social pressure for immediacy  
Increased efficiency  
Find things out immediately  
Good for entertainmen  
Linking context of TV and online  
Background noise  
Ability to looks things up while watching TV  
Additional benefit  
Relaxation  
More satisfied (feeling)

## Open coding: Australia

When alone  
Access to information  
Efficiency, make you extremely productive  
Facilitate relaxation (alone)  
More connected to social network  
Convenience  
Facilitate relaxation (in a family situation)  
Consume a lot more, different things on different topics  
Efficiency in flicking between things  
Communicate with people (virtual world)  
Time poor, very busy so can do lots of things (at once)  
Access to information (related to other media)  
Keep in contact with people  
Time efficiencies  
Stay connected to people  
Access to information  
When alone easier to multitask  
Do more things at once (time saving)  
Easy to do (ease of multitasking)  
Faster and more efficient  
Entertainment/ fun  
Increase efficiency  
For a purpose connected with friends  
Alone (try not to do with others)  
Facilitate relaxation  
At home  
Easy  
Tailor it to what you want to do  
Makes things easier for yourself  
Gain information from different sources  
At home/ at work  
Even when everyone in same room  
Just for fun/ entertainment  
It comes naturally now (habit)  
Information is easy to access  
Everyone is a lot more connected  
Enjoy being on media constantly  
Know what is going on in the world  
Speed of activity/ how quickly can get things done  
Staying connected  
Keeping up with news any time you want  
Staying connected with people  
Avoid boredom  
Access to so many things  
So many options  
Learn a lot from comfort of own home  
Entertainment  
Information  
Knowledge  
Guidance sometimes  
Keep updated, access to information  
Social networking, access to information  
Easy to navigate between media/ devices  
Time saving  
Entertainment (football)  
Background noise  
Multitasking between two media easier than between person and media device  
When don't need much attention  
When out of home/ with friends  
Constant source of stimulation  
Relieve boredom  
Habit  
Access to information  
Being able to do multiple things at the same time  
Makes you extremely productive

Coding groups (Axial and selective coding): U.K., Germany and Australia (combined)

Next, codes with similar meanings are grouped (axial coding). The preliminary examinations of the of the open codes revealed no substantial differences in preference from respondents across the three countries. Accordingly, the axial coding phase consolidates findings from the U.K., Germany and Australia.

To demonstrate the links between the coding phases, grey shaded text (c.f. open code tables above - U.K., Germany and Australia) is used to illustrate an example of the link between the open and axial coding phases of analysis. The open code grey shaded text represents axial coding associated with the first eventual selective code 'effectiveness and efficiency' (in the first table below). Consistently, using the same process, all remaining open codes (U.K., Germany and Australia) are analysed to form several groups of axial and subsequent selective codes.

Coding groups (Axial and selective): U.K (UK), Germany (G) and Australia (A) combined.

Axial codes	Selective code
I feel effective when multitasking (UK) Feels effective (G) Makes things easier (G) Added value (G) Additional benefit (G) It helps me juggle (UK) Deal with all things at once (G) Makes things easier for yourself (A) Speed of activity; how quickly you can get things done (A) Being able to do multiple things at the same time (A) Faster and more efficient (A) Time efficiencies (A) Time effective (UK) Efficient - time (UK) To get more done, in not too much time (G) Simply saves time (G) Time pressure (G) Do more in the same time (time efficiency) get things done faster (G) Improves efficiency for entertainment (G) Increase efficiency (G) Efficiency, make you extremely productive (A) Efficiency in flicking between things (A) Makes you extremely productive (A) Do more things at once (time saving) (A) Time saving (A) Time poor, very busy so can do lots of things (at once) (A) So many things going on (UK)	Effectiveness/ Efficiency

Axial codes	Selective code
Addictive behaviour (UK) Addictive/ habit forming (UK) Not even aware that multitasking sometimes (UK) Habitual behaviour – the world that we live in (UK) Media multitasking is habitual (UK) Some kind of addiction (G) Kind of addiction (G) A kind of compulsion (G) Compulsion (G) Constant compulsion to receive information (G) Habit (G) (A) It comes naturally now (A) Media multitasking has become the norm (UK)	Compulsion/ addiction/ habit

Axial codes	Selective code
I like to multitask (UK) I like multiple streams of stimulation (UK) Don't like just having one thing at a time (UK) One thing at a time is boring (UK) In situations which don't need full attention (UK) Ability to link content in different media (G) Ability to look things up while on TV (G) Different media are different in ability to multitask (UK) Multitasking between media is easier ... (A) I like to do several things at the same time (G) Different media are different (UK)	Multi-channel

Axial codes	Selective code
I'm just good at multitasking (UK) Everyone's developed multitasking skills (UK) Some people are better at multitasking than others (UK) Ease of multitasking (A) Tailor it to what you want (A) Part of everyone's lives (UK) Social pressure (UK) It's wired our brains differently (media multitasking) (UK) Our generation don't focus on one thing any longer (G)	Ability to multitask

Axial codes	Selective code
Technology allows media multitasking (UK) Portable media, so you can carry them around (UK) Easy to navigate between media/ devices (UK) It's there, it's available (UK) All there, so I can use it when I want (UK) So many options (A) Convenience e.g. online newspaper (A) Convenient (A) Multitasking is very convenient (UK)	Convenience

Axial codes	Selective code
Don't like silence (UK) Having background noise (UK) Background noise (A) (G) Background so feel less alone (G) When alone (UK) (A) TV background (for company) (G) A welcome distraction (UK) A useful distraction (G) Only one thing =boredom (UK) Avoiding boredom (UK) (A) Out of boredom (G) Relieves boredom (G) (A) Boring to only watch TV (G) Boring to just watch TV (G) Enjoyable to media multitask (UK) Fun and informative (UK) Creates satisfaction (G) Makes me feel relaxed (G) It's just for fun (G) (A) Relaxation - calms my mind (G) Relaxation (G) Relaxed atmosphere (G) More fun (G) Facilitates relaxation (A) Constant source of stimulation (A) Entertainment and fun (A) Relaxing (A)	Emotional components

Axial codes	Selective code
Bombarded with information – got to make sense of it (UK) Bombarded with media save have to assimilate it somehow (UK) To make sense of all the information (A)	Assimilation

Axial codes	Selective code
Know what is going on in the world (A) To stay updated (A) (UK) Keeping up with everything (UK) Don't want to miss anything (UK) (G) Check information e.g. email (UK) Keeping up with the times (UK) Scared to miss something (G) Stay up to date (G) Don't want to miss out on anything (G) Access to information amazing (A) Different points of view (UK) Bigger picture (UK) Effective in hunt for information (UK) Supplementary information (G) Get information quickly (G) More information/ different kinds of information at the same time (G) To get information in the same moment (G) Gain information from different sources (A) Keep up with the news any time (A)	Stay updated/ information

Axial codes	Selective code
To stay social (UK) Want to be available for friends (G) Easy way to communicate/ stay in touch with people (G) People can get in touch any time (G) To stay in touch with friends (G) In contact with friends at the same time as watching TV (G) More connected to social media network (A) Communicate with people (A) Keep in contact with people (A) Staying connected with people (A) Connected with friends (A)	Connections with people

## Stage 2: Triads - U.K.

### Data collection:

Triad groups (of three participants) are chosen for Stage 2, to enable confirmation and further exploration of the findings of Stage 1 (*c.f.* Paper 2, p.439). Triad groups allow the advantages of discussion and interaction between group members to develop, generating rich and detailed data (Bryman and Bell, 2015; Richie and Lewis, 2003).

With no marked differences uncovered between the three countries in Stage 1; Stage 2 triads groups were conducted solely in the U.K. Four triad groups were conducted using an interview guide. Triad interviews lasting between one to one-and-a-half hours were conducted by the researcher in mutually convenient locations in the south east of the U.K. (Twickenham and Shepperton). Triad groups were audio recorded and transcribed verbatim. For this confirmatory study, the development of the interview guide is based on the findings of Stage 1 analysis, to enable a deeper focus on the uncovered preference dimensions (*c.f.* Paper 2, p.439). The interview guide follows a similar pattern to Stage 1, but with the addition of sorting exercises developed from the findings of Stage 1. Following

good practice, the research was conducted in accordance with the quality criteria recommended by Yardley (2000), as detailed in Paper 2 (p.440).

**Interview guide: triad groups**

**Introduction**

**Introducing the researcher and the study:** as part of my PhD research, at Kington University, I am investigating the behavioural phenomenon of multiple media use. Specifically, this evening in our discussion session, I would like to talk to you about your *multiple media use* behaviour and your experiences when you are using more than one medium at a time or *media multitasking*. For example, when using two devices, such as watching a television while surfing the Internet and texting a friend; or one device - instant messaging while reading online news.

**Reminder of confidentiality:** I intend to audio record the interview, to make sure that I accurately gather your responses and to concentrate on what you are saying, rather than taking notes. However, your responses are confidential and your comments will not be linked with your name in any publication of the findings. If you would like a summary of my findings, then please let me know and I can send them to you.

***TURN ON RECORDER & PHONE!***

***Introductions...my name is Helen – I first became interested in multiple media use as I watched my two children in their late teens using various media in a multitasking situation...and you are...***

**Media consumption patterns:**

**First of all, could you tell me when (at what times) you tend to use media?**

Prompts: typical daily, weekly, weekend/ working day vs non-working day/time of day (morning, noon, afternoon, evening)

Prompts: what for? how long? how often?

**Which media do you use?**

Prompts:

Television (traditional/online)

Newspaper (print/online)

Magazines (print/online)

Radio

Internet (mobile/tablet/laptop)

Social media

Cinema/film streaming...Other...

**Which media devices do you own or use?**

Prompts:

Mobile/smartphone

ipod/ MP3

TV

Radio

Laptop/Tablet

Kindle type device

**Which combinations do you use when media multitasking? STIMULUS MATERIAL...**

***CARD SORTING EXERCISE 1 - Cards for media and devices***

*Sort cards into various media combinations they use...one at a time (this will achieve clarity in terms of terminology) for each combination...(NOTE DOWN ON PENULTIMATE SHEET)*

Prompt for:

Why this combination...

Common combinations...unlikely combinations

Single device/platform...Multiple devices/platforms

*Keep going until they cannot come up with any further combinations (note down/confirm each one)*

**Media multitasking experiences and situations:**

**What situations are you in when you are multitasking with media?**

Prompts:

Multitasking occasions

Equal attention to all or background/foreground media

Environment e.g. location - home or work

Alone or with others

How do you manage you media multitasking?...how does it work in practice? Using examples, can you describe how you multitask with media?

Prompts:

Switching vs simultaneous consumption

Switching...in-depth probing...estimated length of time between switches...

**Reasons for media multitasking (combinations):**

**Why do you prefer to multitask (with media)? Your main reasons for multitasking?**

Prompts:

Benefits

Disadvantages

Convenience

Efficiency

Habit...until reasons are exhausted, then ...

**STIMULUS MATERIAL - CARD SORTING EXERCISE 2**

Here are some things people have said about why they prefer to multitask...

First: Please sort them into two piles ones you AGREE with / ones you DISAGREE with

Second: Please sort the AGREE into the MAIN REASONS

**NOTE DOWN ON BACK SHEET**

**Feelings surrounding media multitasking:**

How do you feel when you are multitasking with media?

Prompts:

In control

Happy

Connected

Relaxed

Entertained...

**Effects of media multitasking:**

What are the effects or outcomes of your media multitasking?

Prompts:

Good or bad thing

Attention...

**Anything else...**

Is there anything else we have not covered?

Prompts: Anything to add on the subject of multiple media use – anything at all?

**End of interview (TURN OFF RECORDERS)**

Any further discussion...

Thank you very much for your time this evening...

**GIVE OUT INCENTIVES & SIGN OFF SHEET TO RESPONDENTS**

CARD SORTING EXERCISE 1	CARD SORTING EXERCISE 2
Television Newspaper Magazine Radio Social media Cinema Film Streaming Texting on mobile Additional suggestions ... note down	Feels effective Helps me juggle things Compulsive Addictive Habitual behaviour Keeps me company Stay connected (in virtual world) When alone When with friends Multi-channel stimulation Prefer to juggle Relieves boredom Stay updated Instant information access Easy to multitask with media Feels efficient Entertaining When no need to concentrate Enjoyable Feels satisfying To cope with lots of information at one time

Again, the seven-step sampling procedure recommended by Churchill and Iacobucci (2010) is applied in Stage 2. Steps 1 and 2 are identical to those in Stage 1. In Step 3, non-probability quota sampling is again used (*c.f.* Paper 2, p.439). The sample comprised two male and two female triad groups (of three participants), with age splits within the Digital Native category of 18-24 and 25-36 (as Stage 1 findings indicated some differences between the youngest and oldest participants within the Digital Native category). In Step 4, determining sample size, it was decided that for this confirmatory study, four triads groups are appropriate. Step 5 was actioned by a professional qualitative research agency who recruited and hosted the triad group interviews. Step 6 involves the validation of the sample and was undertaken by the researcher.

#### Data reduction:

As in Stage 1, the reduction of data in Stage 2 is achieved through an inductive approach (Bryman and Bell, 2015), organising and rearranging the data through the iterative stages of open, axial and selective coding (Boeije, 2010; Sekaran and Bougie, 2013; Malhotra *et al.*, 2017). For brevity, full coding lists are not shown for Stage 2. Following data reduction, the selective codes from the Stage 2 analysis are mapped against those for Stage 1, to consolidate the key themes from the study. A table of findings from Card sorting Exercise 2 (comprising the preferences for multiple media use uncovered at Stage 1 of the study) is included, as this forms a supplementary role in the mapping process.

Card sorting exercise 2: Dimension	Triad 1 18-24 men	Triad 2 25-30 women	Triad 3 18-24 women	Triad 4 25-30 men
Feels effective				X
Helps me juggle things	X	X	X	X
Compulsive	X	X	X	X
Addictive	X	X	X	X
Habitual behaviour	X	X	X	X
Keeps me company		X		
Stay connected (in a virtual world)	X	X	X	X
When alone (or with close people)	X	X	X	X
When with friends				
Multi-channel stimulation				
Prefer to juggle		X		
Relieves boredom	X	X	X	X
Stay updated	X	X	X	X
Instant information access	X	X	X	X
Easy to multitask with media	X	X	X	X
Feels efficient		X	X	X
Entertaining	X	X	X	X
When no need to concentrate		X	X	
Enjoyable	X	X	X	X
Feels satisfying	X			X
To cope with lots of information at one time		X		X

X = people in triad selected and agreed upon this dimension



From the combined analyses of Stage 1 and 2 data, the uncovered themes or dimensions of polychronicity, 'the preference for multiple media use' are: comfort with multitasking, effectiveness and efficiency, emotional gratification, social benefits, multi-media channel preference, convenience, information and knowledge and assimilation (*c.f.* Paper 2, section 4, p.440)

#### Data display:

The eight key themes from the analyses in Stages 1 and 2 of the study are displayed in Paper 2, p.441 entitled 'The dimensions and facets of polychronicity - 'the preference to multitask with media'.

#### Conclusion drawing and verification:

A full discussion of the elements of the eight uncovered dimensions of polychronicity, 'the preference to multitask with media' is found in Paper 2. The trustworthiness of the data is considered using four criteria: credibility, transferability, dependability and confirmability (Guba and Lincoln, 1994). Credibility, the extent to which the data is believable is met by contemplating the uncovered preference dimensions (*c.f.* Paper 2, p.441). The transferability of the eight dimensions of preference for multiple media use is demonstrated by considering their efficacy in a variety of multiple media combinations. Dependability, whether the findings will hold in future studies is shown by the similarity in findings between the first and second stages of the research. The confirmability criterion is met by the findings in stage 2, following comparison with the previous findings in stage 1. Hence the analysis verifies the credibility, transferability, dependability and confirmability (Guba and Lincoln, 1994; Bryman and Bell, 2011) of the dimensions of polychronicity (*c.f.* Paper 2, p.441).

### **E3 Technical Appendix Paper 3**

#### **'Polychronicity - Multiple Media Use' (P-MMU) scale: a multi-dimensional scale to measure polychronicity in the context of multiple media use.**

A cross-sectional research design is used for the study in Paper 3 (De Vaus, 2001). The associated phases of data collection, sampling design and measurement and measures according to Sekaran and Bougie (2016) are applied.

#### **Data collection - Questionnaire:**

The design of the self-completion questionnaire for data collection in Paper 3 is guided by recognised principles of questionnaire design (Dillman, 1983; Oppenheim, 2000), while accounting for the online administration of the questionnaire through a professional list broker. A standardised structure is employed, containing nineteen closed questions, neatly presented and logically ordered, with clearly incorporated instructions (Dillman, 1983; Oppenheim (2000); Saunders *et al.*, 2016) (*c.f.* Technical appendix 3, p.99).

Prior to the survey, pilot testing of the questionnaire was conducted in two stages. In the first stage, to assess face validity, the eight questions forming the main body of the questionnaire were administered face to face using a printed self-completion questionnaire to 20 Digital Native respondents, with an equal male/ female split (Saunders *et al.*, 2016). Following completion, respondents were asked to comment on the questions and identify those which they found difficult to understand (Bell and Waters, 2014). Following the first stage pilot, minor adjustments were made to the wording of three items across the eight questions. The second stage of piloting was administered through the professional list broker, who conducted a 'soft launch' of the survey using the final version of the questionnaire, pausing at approximately 50 responses. At this point, preliminary testing was carried out to ensure there were no completion problems before the survey resumed (eventually collecting 317 responses).

The questionnaire opens with a short introduction, explaining the purpose of the study, defining media multitasking and stating the expected time required to complete the questionnaire (Q1). A screening question is included (Q2), to double check respondents' media multitasking behaviour prior to their self-completion of the survey. An estimated ten minute completion time for the questionnaire is indicated. Following three short demographic questions (Q3-5), a question assessing the usage of a range of media (Q6-7) and a general multitasking question (Q8), the core section of the questionnaire begins. Eight questions (Q10-17) represent the eight dimensions of polychronicity uncovered in Paper 2 (and the subsequently developed items for each dimension). During this part of the survey, the eight questions (and associated scale item statements within) are randomised, to limit any bias associated with question order. The final two questions: Innovativeness with technology (Q18) and Sensation Seeking (Q19) are included (along with the general multitasking scale) to assess the nomological validity of the scale. At the end, respondents are thanked for completing the survey.

### Sampling design:

Design of sampling for Paper 3 follows the seven-step procedure outlined by Churchill and Iacobucci (2010) (*c.f.* Technical appendix 2, p.87).

Step 1 involves the identification of the target population - for this study, multiple media users. Step 2 includes the identification of a sampling frame - in this case Digital Natives (born since 1980 Prensky (2001)) are selected (*c.f.* Paper 3, p.1428). The sampling frame is administered by the specialist list broker employed specifically for this study (Qualtrics), who enable access to a wide range of individuals.

Step 3 comprises the selection of participants from the research population from the two main approaches: probability and non-probability sampling (Bryman and Bell, 2015). A non-probability sample is drawn in this study, through self-selection from an opt-in panel. The selection of respondents was organised by Qualtrics, who took responsibility for the application of the sampling design. It is acknowledged that by employing a list broker there is a lack of control, including the inability to carry out tests related to non-response bias.

Step 4 involves the determination of sample size, which for this study, to develop and validate a new measurement scale using EFA and CFA analyses, included 317 respondents (Tabachnick and Fidell, 2007) (*c.f.* Paper 3, p.1428). Steps 5 and 6, actioning and validating the chosen sample design, are delegated to Qualtrics for data quality assurance.

### Measurement and measures:

Replies for each of the eight dimensions of polychronicity and items within each dimension are obtained using a 7-point Likert scale anchored on 1 = Strongly Agree and 7 = Strongly Disagree. In addition, general multitasking (Konig *et al.*, 2010), Innovativeness with Technology (Agarwal and Prasad, 1998) and Sensation seeking (Hoyle *et al.*, 2002) are included; these 4-item scales use a 7-point Likert scale (*c.f.* Paper 3, p.1428).

## Paper 3: Questionnaire

---

### Start of Block: Intro

Q1

#### Introduction

This is a study about your media use, particularly **when you are using more than one medium at a time or 'media multitasking'**.

**For example;** when you read, watch or listen to media through two or more devices, such as watching a television while surfing the Internet and texting a friend; or on one device, such as instant messaging while reading online news on a smartphone.

The questionnaire should take you about 10 minutes to complete.

---

#### Q2 Do you use media...

- One medium at a time? (1)
- Two media at a time? (2)
- Three or more media at a time? (3)

*Skip To: End of Block If Do you use media... = One medium at a time?*

### End of Block: Intro

---

### Start of Block: Demographics

#### Q3 Your age?

- 15-19 (1)
- 20-24 (2)
- 25-36 (3)
- 37-44 (4)
- 45+ (5)

*Skip To: End of Block If Your age? = 37-44*

*Skip To: End of Block If Your age? = 45+*

---

**Q4 Your gender?**

- Male (1)
  - Female (2)
- 

**Q5 Your working status?**

- Working full-time (1)
- Working part-time (2)
- Not working (3)
- Studying (4)

End of Block: Demographics

---

Start of Block: Behaviours



**Q6 Your media consumption behaviour On average, how many hours a day do you spend...**

	0 (1)	1 (2)	2 (3)	3 (4)	4 (5)	5+ (6)
Watching television (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listening to radio (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading newspapers (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading magazines (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On the internet (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On your mobile phone (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

**Q7 On average...**

	0 (1)	1 (2)	2 (3)	3 (4)	4 (5)	5+ (6)
How many times a month do you visit the cinema? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How many hours a day do you spend media multitasking? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q8 Your multitasking behaviour During a typical hour....**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I am occupied with several things simultaneously. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work on more than one task. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not work on tasks in a sequential manner. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I accomplish several tasks simultaneously. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Behaviours

Start of Block: Main

**Q9** *The statements in the following sections are about your feelings towards media multitasking. Please state your level of agreement or disagreement with each of the statements.*

-----  
Page Break \_\_\_\_\_  
\_\_\_\_\_



**Q10 Comfort with multitasking**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is something which comes naturally to me. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a constant compulsion to multitask with media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm just good at multitasking with media. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking is addictive. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I don't even realise that I am media multitasking. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, multitasking with media is habitual behaviour. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media is compulsive. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable when I am media multitasking. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break





**Q11 Multi-media channel preference**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I like switching back and forth between different media. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I lose interest if I only use one medium. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to juggle between media. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy shifting my attention between media. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please tick disagree for this statement. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like having multiple streams of media stimulation. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do more than one media activity at a time. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to use a combination of media. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q12 Convenience**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
It is easy for me to multitask with media. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technology nowadays makes media multitasking effortless. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to multitask with media when I am on the move. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking is effortless with portable devices. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to multitask with media in many different locations. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, media multitasking is convenient. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to navigate between media when I am multitasking. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q13 Emotional gratification**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
When I multitask with media I feel less alone. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking is enjoyable. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media to relax. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media keeps me company. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking makes me feel good. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media to relieve boredom. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media to entertain myself. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q14 Social benefits**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking helps me to feel connected with my friends and family. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I multitask with media I feel closer to other people. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking enhances my social experience. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When media multitasking, I feel in touch with what my friends are doing. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me feel available for my friends and family. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When media multitasking, I feel connected in a virtual world. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media gives me a sense of belonging. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q15 Effectiveness and efficiency**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking saves me time. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media helps me juggle things. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When media multitasking I can do many activities at the same time. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media makes me more productive. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me get things done quickly. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flicking between media makes me feel efficient. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can get more done when I multitask with media. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



### Q16 Information and knowledge

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking lets me stay up to date with everything. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When media multitasking, I can get instant access to information. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking allows me to see the 'bigger picture'. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When multitasking with media, I get supplementary information on a topic. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking gives me different points of view. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media so that I can gain knowledge. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

---



**Q17 Assimilation**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking helps me to manage information. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media because it allows me to choose media content of interest. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking helps me absorb the media information bombarded at me. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media to cope with the volume of information available nowadays. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me to filter media content. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please tick somewhat agree for this statement. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media helps me to make sense of information. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Main

Start of Block: Final section



**Q18 Innovativeness**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
If I heard about a new information technology, I would look forward to ways to experiment with it. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Among my peers, I am usually the first to try out new information technologies. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general I am usually eager to try out new technologies. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to experiment with new information technologies. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

---





**Q19 Sensation seeking**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I would like to explore strange places. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do frightening things. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like new and exciting experiences even if I have to break the rules. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like friends who are exciting and unpredictable. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

---

**Q17 Thank you for completing the survey**

**End of Block: Final section**

---

### Analysis - supplementary detail:

The development and validation of the P-MMU scale is carried out in two stages as discussed in detail in Paper 3.

Stage 1: the development of the P-MMU:

For Stage 1, examining the internal coherency of each dimension (*c.f.* Paper 3, p.1429), supplementary detail is provided, with explanations of the evaluation criteria used to assess the reliability and validity of the scale. Tables are only shown for the Comfort dimension, for reasons of brevity and as following exploratory factor analysis (EFA) this dimension is separated into two dimensions (*c.f.* Paper 3, p.1429).

Prior to conducting EFA or principal component analysis (PCA), intercorrelations between variables must be examined to ensure that correlations are satisfactory ( $> .30$ ) (Field, 2007). For example, considering the Comfort dimension, it is expected that since all items are measuring Comfort with multitasking, they will correlate. The 'Correlation Matrix<sup>a</sup>' table for Comfort indicates that correlations for all items of the dimension meet the  $>.30$  benchmark (Field, 2007; Hair *et al.*, 2010). Similarly, the other seven dimensions are examined, all meeting the benchmark.

Multicollinearity occurs when variables are (too) highly correlated, causing a problem for factor analysis (as the aim is to determine the unique contribution to a factor of the variables that are highly correlated) (Field, 2007; Hair *et al.*, 2010). Hence, high correlations ( $>.8$ ) should also be noted. Multicollinearity is examined using the Determinant, which should be  $>.00001$  (Field, 2007; Hair *et al.*, 2010). For the Comfort dimension, the determinant is .17, indicating that multicollinearity is not present. Similarly, the Determinant is examined for the other seven dimensions - all meet the benchmark.

### **Factor Analysis**

Correlation Matrix <sup>a</sup>								
		Comf6	Comf1	Comf8	Comf7	Comf5	Comf3	Comf2
Correlation	Comf6	1.000	.339	.681	.321	.579	.439	.724
	Comf1	.339	1.000	.358	.699	.437	.691	.363
	Comf8	.681	.358	1.000	.354	.552	.439	.707
	Comf7	.321	.699	.354	1.000	.401	.745	.394
	Comf5	.579	.437	.552	.401	1.000	.441	.537
	Comf3	.439	.691	.439	.745	.441	1.000	.439
	Comf2	.724	.363	.707	.394	.537	.439	1.000
Sig. (1-tailed)	Comf6		.000	.000	.000	.000	.000	.000
	Comf1	.000		.000	.000	.000	.000	.000
	Comf8	.000	.000		.000	.000	.000	.000
	Comf7	.000	.000	.000		.000	.000	.000
	Comf5	.000	.000	.000	.000		.000	.000
	Comf3	.000	.000	.000	.000	.000		.000
	Comf2	.000	.000	.000	.000	.000	.000	

a. Determinant = .017

Anti-image matrices provide measures of sampling accuracy. The benchmark for the diagonal<sup>a</sup> elements in the lower half of table is >.5 (Field, 2007; Hair *et al.*, 2010). Inspection of the table indicates that all diagonal<sup>a</sup> values are >.5; hence it is concluded that the sampling accuracy benchmark is met for the Comfort dimension. All other dimensions are also examined for sampling accuracy, meeting this benchmark. Community (the total amount of variance a measured variable has in common with the factor on which it loads) for all items of a dimension should be >.5 (Hair *et al.*, 2010). Inspection of the Communalities table shows that all items meet the benchmark for the Comfort dimension. All other dimensions are examined, with all items meeting the benchmark.

		Anti-image Matrices						
		Comf6	Comf1	Comf8	Comf7	Comf5	Comf3	Comf2
Anti-image Covariance	Comf6	.382	.007	-.105	.045	-.112	-.055	-.159
	Comf1	.007	.432	-.005	-.146	-.077	-.123	.005
	Comf8	-.105	-.005	.418	.008	-.082	-.032	-.148
	Comf7	.045	-.146	.008	.371	-.025	-.176	-.048
	Comf5	-.112	-.077	-.082	-.025	.563	-.004	-.033
	Comf3	-.055	-.123	-.032	-.176	-.004	.355	.006
	Comf2	-.159	.005	-.148	-.048	-.033	.006	.376
Anti-image Correlation	Comf6	.836 <sup>a</sup>	.016	-.262	.118	-.242	-.150	-.420
	Comf1	.016	.857 <sup>a</sup>	-.011	-.364	-.157	-.314	.012
	Comf8	-.262	-.011	.875 <sup>a</sup>	.022	-.169	-.084	-.375
	Comf7	.118	-.364	.022	.798 <sup>a</sup>	-.055	-.485	-.130
	Comf5	-.242	-.157	-.169	-.055	.925 <sup>a</sup>	-.010	-.073
	Comf3	-.150	-.314	-.084	-.485	-.010	.832 <sup>a</sup>	.016
	Comf2	-.420	.012	-.375	-.130	-.073	.016	.841 <sup>a</sup>

a. Measures of Sampling Adequacy(MSA)

### Communalities

	Initial	Extraction
Comf6	1.000	.794
Comf1	1.000	.790
Comf8	1.000	.762
Comf7	1.000	.828
Comf5	1.000	.587
Comf3	1.000	.807
Comf2	1.000	.778

Extraction Method: Principal Component Analysis.

EFA is conducted using the PCA extraction method for the Comfort dimension. In the 'Total Variance Explained' table, the left-hand columns show the eigenvalues before extraction, determining the importance of each component in the factor solution. Factors 1 and 2 are the most important, showing values higher than 1, determining that these factors should be retained by SPSS for extraction (Field, 2007). The middle columns display the same values, discounting the discarded components. In the right-hand columns, the eigenvalues of the factors following rotation are shown. Rotation optimises the factor structure, equalising the relative importance of remaining factors 1 and 2; 40.9 and 35.5 respectively, compared with 57.8 and 18.6 before rotation.

#### Total variance explained

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.044	57.766	57.766	4.044	57.766	57.766	2.863	40.895	40.895
2	1.302	18.599	76.365	1.302	18.599	76.365	2.483	35.471	76.365
3	.508	7.263	83.628						
4	.323	4.618	88.246						
5	.310	4.432	92.677						
6	.293	4.190	96.867						
7	.219	3.133	100.000						

Extraction Method: Principal Component Analysis.

Examining the 'Rotated Component Matrix<sup>a</sup>', it can be seen that the factors distinctly load onto two factors. Following the examination of the seven items within the Comfort dimension, it was decided that the dimension should be split into two dimensions: 'Comfort with multitasking' and 'Compulsive-addictive' (c.f. Paper 3, p.1429).

#### Rotated Component Matrix<sup>a</sup>

	Component	
	1	2
Comf6	.874	
Comf2	.854	
Comf8	.849	
Comf5	.686	
Comf7		.889
Comf1		.865
Comf3		.843

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Note: These results are prior to the re-run EFA for each dimension separately, so the indices and loadings differ from those presented in Paper 3.

Reliability: is assessed by examining the internal consistency, composite reliability and item loadings associated with the P-MMU scale.

Internal consistency:

In reflective measures, the expectation is that the manifestations of a construct will be highly correlated (Hair *et al.*, 2014). Cronbach's Alpha is the traditional criterion applied to assess internal consistency. In Stage 1, Cronbach's Alpha exceeds the recommended .7 benchmark (Hair *et al.*, 2010) for all nine dimensions of the P-MMU scale (Paper 3, Table 5, p.1430), hence internal consistency is confirmed. Due to the recognised limitations of Cronbach's Alpha, i.e. that it is sensitive to the number of items in the scale and may underestimate internal consistency reliability (Hair *et al.*, 2014); composite reliability (CR), which does not assume equal indicator loadings is used as an additional test of internal consistency (Fornell and Larcker, 1981). The benchmark for composite reliability is  $>.7$  (Fornell and Larcker, 1981) - at Stage 1, all nine items meet this criterion (*c.f.* Paper 3, Table 5, p.1431).

Item loadings:

Hair *et al.* (2010) recommend that item loadings should be  $>.7$ . In Stage 1, all item loadings are  $>.8$  (*c.f.* Paper 3, Table 5, p.1431), which is considered extremely high (Hair *et al.*, 2010).

Validity: is assessed by examining convergent validity and discriminant validity.

Convergent validity:

Convergent validity is the extent to which the new scale positively correlates with other variables or single item or reflective measures of the same construct (Hair *et al.*, 2017). Convergent validity is assessed through the Average Variance Extracted (AVE), which represents the extent to which a latent construct explains the variance of its indicators (Hair *et al.*, 2017). The benchmark for AVE is that it should be  $>.5$  (Bagozzi and Yi, 1988; Hair *et al.*, 2014). Stage 1 analysis confirms that all items meet the  $>.5$  benchmark for AVE, confirming the convergent validity of the P-MMU scale.

Discriminant validity:

Discriminant validity is assessed to determine whether a construct is distinct from other constructs, in terms of the extent to which it correlates with other constructs together with how much indicators represent a single construct. Put simply, determining that the items measure what they set out to measure. Values between and within variables are assessed by examining the cross loadings of all included dimensions (Hair *et al.*, 2017). In Stage 1, the correlations for all included dimensions of the P-MMU are shown in Paper 3, Table 6, p.1432. To establish discriminant validity, the corresponding values of items loadings should be higher for the construct they are linked to, than for any other construct. The Fornell-Larcker criterion (1981) is applied, comparing the square root of the AVE values with the latent variable correlations. The criterion states that the square root of the AVE should be greater than its highest correlation with any other construct. For example, for the Comfort dimension in Paper 3, Table 6, p.1432, the emboldened value of **.851** (with the

construct) is higher than all values with other constructs, confirming discriminant validity. Inspection of all diagonal bold values, representing the remaining dimensions, confirms discriminant validity for the P-MMU scale.

Stage 2: the validation of the P-MMU:

Following the examination of the internal coherency of the dimensions in Stage 1, it is important to validate the P-MMU measures to assess their quality (Hair *et al.*, 2013). Confirmatory Factor Analysis (CFA) is applied to provide a confirmatory test of the measurement theory (Hair *et al.*, 2013), for initial validation of the scale, with P-MMU modelled as a higher order construct (*c.f.* Paper 3, p.1429). CFA is chosen as it allows testing to ascertain the extent to which the measured variables represent the constructs. The procedures followed in the paper (*c.f.* Paper 3, p.1429) are used to validate the P-MMU scale. Reliability and validity criteria are detailed in the paper (*c.f.* Paper 3, p.1429).

#### **E4 Technical Appendix Paper 4**

##### **Why do people choose to multitask with media? The dimensions of polychronicity as drivers of multiple media use - a user typology.**

In Paper 4, a cross-sectional research design is used (De Vaus, 2001). The related stages of data collection, sampling design and measurement and measures are employed (Sekaran and Bougie, 2016).

##### **Data collection:**

The data collection stage mirrors Paper 3 (*c.f.* Technical appendix 3, p.99), but using the newly validated P-MMU scale (*c.f.* Technical appendix 4, p.120)

##### **Sampling:**

The design of sampling is identical to those in Paper 3 (*c.f.* Technical appendix Paper 3, p. 99).

##### **Measurement and measures:**

The included measurement and measures are identical to those in Paper 3 (*c.f.* Technical appendix Paper 3, p.99).

## Paper 4 Questionnaire

---

### Start of Block: Intro

Q1

**Introduction** This is a study about your media use, particularly **when you are using more than one medium at a time or 'media multitasking'**.

**For example;** when you read, watch or listen to media through two or more devices, such as watching a television while surfing the Internet and texting a friend; or on one device, such as instant messaging while reading online news on a smartphone.

The questionnaire should take you about 10 minutes to complete.

---

Q2 Do you use media...

- One medium at a time? (1)
- Two media at a time? (2)
- Three or more media at a time? (3)

*Skip To: End of Block If Do you use media... = One medium at a time?*

### End of Block: Intro

---

### Start of Block: Demographics

Q3 Your age?

- 15-19 (1)
- 20-24 (2)
- 25-36 (3)
- 37-44 (4)
- 45+ (5)

*Skip To: End of Block If Your age? = 37-44*

*Skip To: End of Block If Your age? = 45+*

---



**Q4 Your gender?**

- Male (1)
- Female (2)

**Q5 Your working status?**

- Working full-time (1)
- Working part-time (2)
- Not working (3)
- Studying (4)

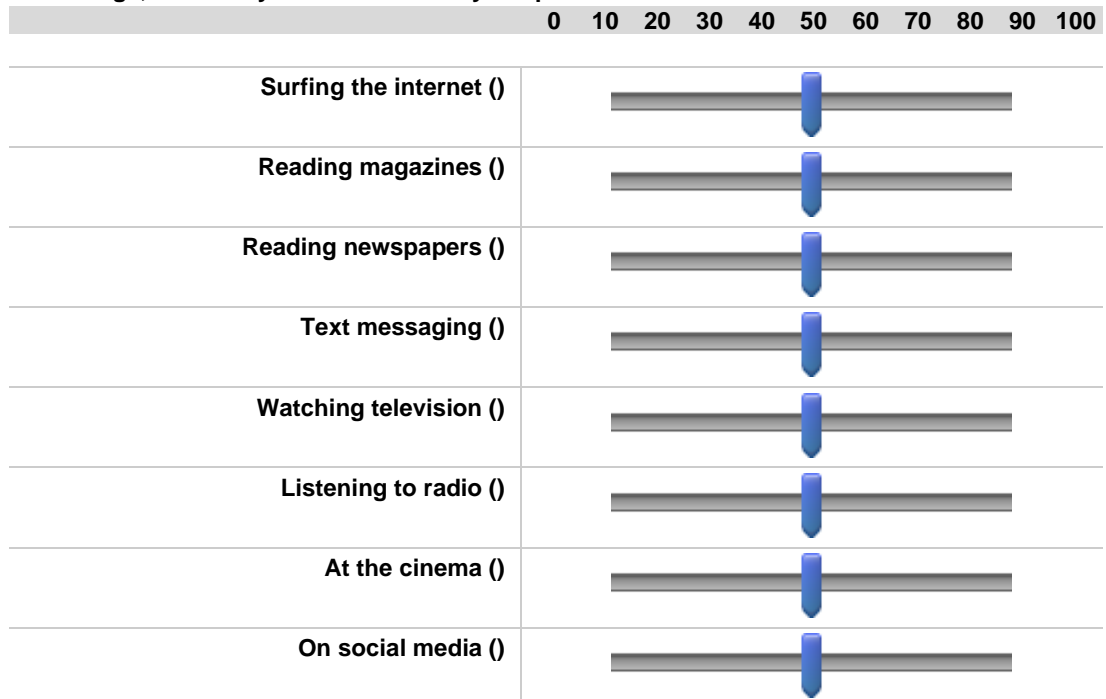
End of Block: Demographics

Start of Block: Behaviours



**Q6 Your media consumption behaviour**

On average, how many hours a week do you spend...



Page Break



**Q7 Your media multitasking behaviour While surfing the internet, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

---



**Q8 While reading a magazine, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Surf the internet (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

---



**Q9 While reading a newspaper, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q10 While text messaging, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q11 While watching television, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q12 While listening to radio, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q13 While at the cinema, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break





**Q14 While using social media, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q15 During a typical hour....**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I am occupied with several things simultaneously when using media. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work on more than one task when I am using media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not use media in a sequential manner. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am using media, I accomplish several tasks simultaneously. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Behaviours

Start of Block: Main

**Q16 The statements in the following sections are about your feelings towards media multitasking. Please state your level of agreement or disagreement with each of the statements.**

-----  
Page Break



**Q17 Comfort with multitasking**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is something which comes naturally to me. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm just good at multitasking with media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, multitasking with media is habitual behaviour. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable when I am media multitasking. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q18 Compulsive addictive**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is addictive. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a constant compulsion to multitask with media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media is compulsive. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please tick disagree for this statement. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Skip To: End of Block If Compulsive addictive != Please tick disagree for this statement. [ Disagree ]**

Page Break



**Q19 Multi-media channel preference**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I like switching back and forth between different media. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to juggle between media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like having multiple streams of media stimulation. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do more than one media activity at a time. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q20 Convenience**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Technology nowadays makes media multitasking effortless. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to multitask with media in many different locations. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking is effortless with portable devices. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to navigate between media when I am multitasking. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q21 Emotional gratification**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is enjoyable. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media to relax. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media keeps me company. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking makes me feel good. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q22 Social benefits**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking helps me to feel connected with my friends and family. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I multitask with media I feel closer to other people. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me feel available for my friends and family. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media gives me a sense of belonging. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break





**Q23 Effectiveness and efficiency**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking saves me time. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media makes me more productive. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me get things done quickly. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can get more done when I multitask with media. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q24 Information and knowledge**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
When media multitasking, I can get instant access to information. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking allows me to see the 'bigger picture'. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking gives me different points of view. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media so that I can gain knowledge. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q25 Assimilation**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking helps me to manage information. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking helps me absorb the media information bombarded at me. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me to filter media content. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media helps me to make sense of information. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Main

Start of Block: Final section



**Q26 Innovativeness**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
If I heard about a new information technology, I would look forward to ways to experiment with it. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Among my peers, I am usually the first to try out new information technologies. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general I am usually eager to try out new technologies. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to experiment with new information technologies. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q27 Sensation seeking**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I would like to explore strange places. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do frightening things. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like new and exciting experiences even if I have to break the rules. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like friends who are exciting and unpredictable. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break

**Q28 Thank you for completing the survey**

**End of Block: Final section**

---

Analysis - supplementary detail:

The multi-step framework follows the steps shown in the 'Analytical framework' table. For each step, complementary explanations are added where appropriate and cross-referenced with Paper 4.

Analytical framework

Analytical technique		
fsQCA	Step 1 - Testing the assumption of symmetric functional relationships in the research model	Identify and examine alternative causal configurations
	Step 2 - Confirmation of predictive validity	Randomly split the sample into modelling and hold-out and compare solutions
PLS	Step 3 - Testing the measurement model	Examine the psychometric (reliability and validity) properties of the multi-item scales
	Step 4 - Testing the structural model	Testing significance of the functional relationships, evaluating goodness of fit indexes and confirming predictive validity
	Step 5 – Determine number of segments	FIMIX-PLS likelihood-based information criteria for different segment numbers help determine number of segments
	Step 6 – Refine segmentation membership and obtain solutions for each segment	The refined segment membership from PLS-POS is used to examine inter-segment heterogeneity
	Step 7 – Examination of the relative importance of the P-MMU dimensions	The IPMA procedure provides information about the total effects of the P-MMU dimensions on multiple media use
Chi square and ANOVA tests	Step 8 – Profiling the segments	Testing for associations between the segments and demographic characteristics and examining mean score differences between the segments

### Step 1 – fsQCA:

Fuzzy-set Qualitative Comparative Analysis (FsQCA) is an exploratory approach, described by Ragin (2000) as concurrently incorporating qualitative and quantitative characteristics in calibrating the membership of sets. A conventional set is dichotomous - a survey respondent is either in or out of a set (usually assigned 0 or 1), whereas a fuzzy set allows membership of a set in the interval between 0 and 1. The central notion of fuzzy sets is that the scaling of membership scores is allowed, admitting partial membership. In this way, fuzzy sets possess similar advantages to interval scales, whereby granular distinctions are possible (Ragin, 2000) (*c.f.* Paper 4, p.257).

Step 2 - fsQCA: No additional information - *c.f.* Paper 4, p.257.

### Step 3 - PLS:

Hair *et al.* (2017) classify multivariate methods as those used primarily for exploratory purposes and those used for confirmatory analyses. Within these categories, first and second generation techniques are identified. First generation techniques are used to test existing theories, patterns and relationships among established or observable variables in exploratory and confirmatory analyses. However, the variables in this study, representing preference, are non-observable concepts (also known as latent variables) - hence second generation techniques are considered appropriate. Second generation techniques include structural equation modelling methods, classified by Hair *et al.* (2017) as primarily exploratory (PLS-SEM) or primarily confirmatory (CB-SEM). CB-SEM is recommended when testing an entire conceptual framework. For this study, examining multiple functional relationships between variables (in addition to the model as a whole), PLS-SEM is indicated.

The systematic step by step process for applying PLS-SEM recommended by Hair *et al.* (2017) is adopted. The initial steps require the specification of the structural and measurement models and the collection of data (*c.f.* Paper 4, p.256). The nature of the relationships between constructs and their indicators imply the reflective character of the latent variables (Hair *et al.*, 2017). Accordingly, the adopted approach assesses PLS-SEM results for a reflective measurement model.

PLS-SEM measurement or outer model:

#### Collinearity:

In multivariate analysis, collinearity occurs when two or more variables measure the same construct. In Paper 4, collinearity is tested following the procedure recommended by Kock and Lynn (2012). Inspection of the 'Collinearity Statistics (VIF)' table shows that all VIF values are <3.3 indicating no evidence of lateral collinearity (or common method bias).

### Collinearity Statistics (VIF)

	Outer VIF Values	Inner VIF Values	Copy to Clipboard: Excel							
	Assimilati...	Comfort	Compulsi...	Convenie...	Effectiven...	Gratificati...	Info kno...	MMC pre...	MMU	Random ...
Assimilati...										<b>1.388</b>
Comfort										<b>1.748</b>
Compulsi...										<b>1.480</b>
Convenie...										<b>2.134</b>
Effectiven...										<b>1.502</b>
Gratificati...										<b>2.671</b>
Info & kn...										<b>1.825</b>
MMC pre...										<b>2.875</b>
MMU										<b>1.278</b>
Random ...										
Social										<b>2.222</b>

P-MMU Scale items, factor (bold) and cross loadings:

The table indicates that the loading of the scale items to the intended dimension (bold) are all above the .7 benchmark and higher than the corresponding values with other constructs (c.f. Paper 4, p.259).

Dimensions of the P-MMU	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Assimilation [1] Media multitasking helps me to filter media content	<b>0.923</b>	0.401	0.332	0.477	0.453	0.518	0.637	0.487	0.423
Multitasking with media helps me to make sense of information	<b>0.897</b>	0.303	0.313	0.407	0.344	0.507	0.599	0.410	0.453
Multitasking helps me absorb the media bombarded at me	<b>0.921</b>	0.367	0.393	0.440	0.390	0.518	0.608	0.529	0.430
Media multitasking helps me to manage information	<b>0.942</b>	0.372	0.337	0.449	0.388	0.552	0.670	0.468	0.452
Comfort with MM [2] I feel comfortable when I am media multitasking	0.345	<b>0.906</b>	0.349	0.572	0.610	0.429	0.453	0.409	0.340
For me, multitasking with media is habitual behavior	0.358	<b>0.876</b>	0.285	0.654	0.472	0.456	0.379	0.464	0.287
Media multitasking is something which comes naturally to me	0.308	<b>0.843</b>	0.379	0.541	0.396	0.435	0.352	0.414	0.320
I'm just good at multitasking with media	0.377	<b>0.889</b>	0.345	0.601	0.526	0.440	0.379	0.449	0.292
Compulsive addictive [3] I feel a constant compulsion to multitask with media	0.360	0.356	<b>0.938</b>	0.340	0.255	0.492	0.324	0.485	0.420
Multitasking with media is compulsive	0.357	0.409	<b>0.955</b>	0.345	0.292	0.515	0.331	0.477	0.452
Media multitasking is addictive	0.342	0.334	<b>0.944</b>	0.343	0.243	0.482	0.293	0.446	0.376



Convenience [4]										
It is easy to navigate between media when I am multitasking	0.409	0.584	0.319	<b>0.849</b>	0.373	0.456	0.356	-0.224	0.507	
Media multitasking is effortless with portable devices	0.409	0.584	0.319	<b>0.849</b>	0.373	0.460	0.356	0.507	0.295	
Technology nowadays makes media multitasking effortless	0.415	0.534	0.341	<b>0.871</b>	0.308	0.452	0.309	0.580	0.353	
It is easy to multitask with media in many different locations	0.426	0.558	0.297	<b>0.874</b>	0.340	0.470	0.353	0.523	0.323	
Effectiveness and efficiency [5]										
I can get more done when I multitask with media	0.423	0.509	0.27	0.425	<b>0.913</b>	0.456	0.474	0.366	0.389	
Multitasking with media makes me more productive	0.419	0.563	0.274	0.417	<b>0.962</b>	0.465	0.511	0.349	0.413	
Media multitasking saves me time	0.401	0.498	0.277	0.352	<b>0.940</b>	0.406	0.512	0.319	0.37	
Media multitasking helps me get things done quickly	0.354	0.531	0.221	0.366	<b>0.935</b>	0.404	0.468	0.342	0.368	
Emotional gratification [6]										
Media multitasking is enjoyable	0.472	0.521	0.402	0.587	0.448	<b>0.842</b>	0.472	0.731	0.563	
Media multitasking makes me feel good	0.428	0.264	0.409	0.324	0.272	<b>0.816</b>	0.322	0.591	0.559	
I multitask with media to relax	0.507	0.416	0.48	0.423	0.350	<b>0.821</b>	0.426	0.538	0.480	
Multitasking with media keeps me company	0.513	0.496	0.481	0.491	0.502	<b>0.899</b>	0.466	0.626	0.598	
Information and knowledge [7]										
When media multitasking, I can get instant access to information	0.553	0.486	0.298	0.435	0.501	0.478	<b>0.742</b>	0.407	0.391	
Media multitasking allows me to see the 'bigger picture'	0.649	0.400	0.345	0.343	0.485	0.434	<b>0.936</b>	0.326	0.505	
Media multitasking gives me different points of view	0.633	0.365	0.241	0.368	0.443	0.452	<b>0.927</b>	0.364	0.530	
multitask with media so that I can gain knowledge	0.569	0.397	0.318	0.342	0.482	0.453	<b>0.886</b>	0.375	0.448	
Multi-media channel preference [8]										
I like switching back and forth between different media	0.456	0.462	0.350	0.606	0.344	0.633	0.321	<b>0.834</b>	0.451	
I like to juggle between media	0.479	0.428	0.482	0.563	0.331	0.671	0.334	<b>0.911</b>	0.505	
I like to do more than one media activity at a time	0.475	0.415	0.460	0.543	0.273	0.640	0.401	<b>0.894</b>	0.468	
I like having multiple streams of media stimulation	0.430	0.462	0.458	0.557	0.352	0.66	0.364	<b>0.914</b>	0.527	

Social benefits [9]										
Multitasking with media gives me a sense of belonging	0.460	0.311	0.404	0.369	0.345	0.599	0.482	0.503	<b>0.941</b>	
Media multitasking helps me feel available for my friends and family	0.452	0.349	0.403	0.364	0.416	0.585	0.532	0.520	<b>0.946</b>	
When I multitask with media, I feel closer to other people	0.404	0.316	0.377	0.344	0.390	0.577	0.471	0.504	<b>0.912</b>	
Media multitasking helps me to feel connected with my friends and family	0.441	0.329	0.449	0.318	0.379	0.645	0.511	0.510	<b>0.897</b>	

Note: \* Item removed during scale purification. All factor loadings are significant at  $p < .001$

#### Reliability and validity indices:

The bold and italicised values are the square roots of AVE; all meet the benchmark (Hair *et al.*, 2010) (*c.f.* Technical appendix 3). Below the diagonal elements are bivariate correlations, while above the diagonal elements are the HTMT values - all meet the benchmark criteria (Hair *et al.*, 2017; Henseler *et al.*, 2015).

	AVE	$\rho_c$	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
[1] Assimilation	0.797	0.940	<b>0.893</b>	0.453	0.418	0.535	0.477	0.659	0.766	0.573	0.525
[2] Comfort	0.773	0.931	0.415	<b>0.879</b>	0.417	0.756	0.610	0.566	0.521	0.547	0.382
[3] Compulsive	0.894	0.962	0.389	0.390	<b>0.945</b>	0.391	0.291	0.580	0.369	0.530	0.467
[4] Convenience	0.763	0.928	0.491	0.673	0.362	<b>0.873</b>	0.457	0.613	0.475	0.701	0.406
[5] Effectiveness	0.879	0.967	0.451	0.564	0.28	0.418	<b>0.938</b>	0.507	0.582	0.393	0.432
[6] Gratification	0.715	0.909	0.590	0.502	0.526	0.538	0.465	<b>0.846</b>	0.583	0.828	0.721
[7] Information	0.768	0.929	0.696	0.442	0.335	0.401	0.526	0.499	<b>0.876</b>	0.462	0.576
[8] MMC pref.	0.790	0.938	0.528	0.495	0.497	0.634	0.365	0.732	0.398	<b>0.889</b>	0.592
[9] Social	0.854	0.959	0.485	0.353	0.442	0.378	0.413	0.65	0.541	0.551	<b>0.924</b>
Innovativeness	.888	.666									
Sensation seeking	.808	.944									

Step 4 - PLS: No additional information - *c.f.* Paper 4, p.259

Step 5 - PLS: No additional information - *c.f.* Paper 4, p.259

Step 6 - PLS: No additional information - *c.f.* Paper 4, p.259

Step 7 - PLS: No additional information - *c.f.* Paper 4, p.259

Step 8 - Chi-square and ANOVA: No additional information - *c.f.* Paper 4, p.263

## **E5 Technical Appendix Paper 5**

### **Regulatory Mode Theory - effects on multiple media use.**

A cross-sectional design is chosen for both studies in Paper 5 (De Vaus, 2001). Corresponding associated data collection, sampling design and measurement and measures are used (Sekaran and Bougie, 2016).

#### **Data collection:**

The research design of Paper 5 incorporates two distinct phases. Study 1 ascertains the relationship between regulatory mode orientations and multiple media use, prior to focal Study 2 (*c.f.* Paper 5, p.42). In Study 1, data collection replicates Paper 4 (not including the dimensions of preference) but adding regulatory mode (*c.f.* Technical appendix 5, p.148). The design and content of the questionnaire in Study 2 replicates Study 1, with the inclusion of the dimensions of preference (*c.f.* Technical appendix 5, p.165).

#### **Sampling:**

In studies 1 and 2, the sampling design employed in Papers 3 and 4 is repeated (*c.f.* Technical appendix 3, p.99).

#### **Measurement and measures:**

In addition to the measures repeated from Paper 4 (*c.f.* Technical appendix 4, p.120), the regulatory mode (locomotion and assessment) measure (Kruglanski *et al.*, 2000) is added in studies 1 and 2; the P-MMU (Robinson and Kalafatis, 2017) is also included in Study 2 (*c.f.* Technical appendix 5, p.148; p.165).

## Paper 5: Study 1 Questionnaire

---

### Start of Block: Intro

**Q1 Introduction** Thank you for participating in this survey, which is part of academic research undertaken at Kingston Business School, London. The study is about your media use, particularly **when you are using more than one medium at a time or 'media multitasking'**.

**For example;** when you read, watch or listen to media through two or more devices, such as watching a television while surfing the Internet and texting a friend; or on one device, such as instant messaging while reading online news on a smartphone.

The questionnaire should take you about 5 minutes to complete

---

### Q2 Do you use media...

- One medium at a time? (1)
- Two media at a time? (2)
- Three or more media at a time? (3)

Skip To: End of Block If Do you use media... = One medium at a time?

### End of Block: Intro

---

### Start of Block: Demographics

### Q3 Your age?

- 18-24 (2)
- 25-37 (3)
- 38-44 (4)
- 45+ (5)

Skip To: End of Block If Your age? = 38-44

Skip To: End of Block If Your age? = 45+

---

**Q4 Your gender?**

- Male (1)
- Female (2)

**Q5 Your working status?**

- Working full-time (1)
- Working part-time (2)
- Not working (3)
- Studying (4)

End of Block: Demographics

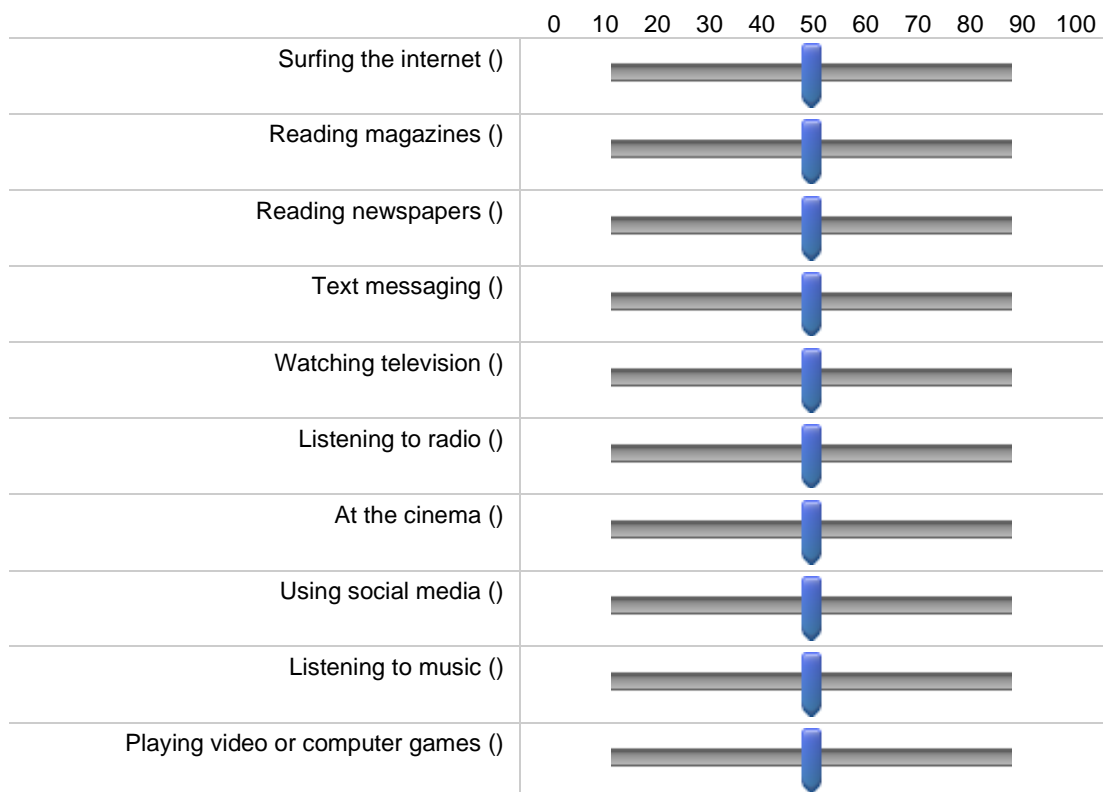
Start of Block: Behaviours



**Q6 Your media consumption behaviour**

On average, how many hours a week do you spend...

Click to write Label 1



Page Break



**Q7 Your media multitasking behaviour While surfing the internet, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q8 While reading a magazine, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Surf the internet (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q9 While reading a newspaper, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break





**Q10 While text messaging, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q11 While watching television, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q12 While listening to radio, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q13 While at the cinema, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q14 While using social media, do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**Q15 While listening to music do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play video or computer games (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---



**Q16 While playing video or computer games do you...**

	Most of the time (1)	Some of the time (2)	A little of the time (3)	Never (4)
Read a magazine (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text message (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch a film at the cinema (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surf the internet (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to music (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social media (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q17 During a typical hour....**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I am occupied with several things simultaneously when using media. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work on more than one task when I am using media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not use media in a sequential manner. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am using media, I accomplish several tasks simultaneously. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Behaviours

Start of Block: Block 6



Q18 <b>Some questions about you ... (a)</b>	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Somewhat disagree (13)	Disagree (4)	Strongly Disagree (5)
I don't mind doing things even if they involve extra effort. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a 'workaholic'. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel excited just before I am about to reach a goal. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy actively doing things, more than just watching and observing. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a 'doer'. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I finish one project, I don't wait before starting on a new one. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I decide to do something, I can't wait to get started. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
By the time I accomplish a task, I already have the next one in mind. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a 'high energy' person. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the time my thoughts are occupied with the task I wish to accomplish. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When I get started on something, I usually persevere until I finish it. (11)

I am a 'go-getter'. (12)

End of Block: Block 6

Start of Block: Block 7



Q19 (b)	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
If I heard about a new information technology, I would look forward to ways to experiment with it. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Among my peers, I am usually the first to try out new information technologies. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general I am usually eager to try out new technologies. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to experiment with new information technologies. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20 (c)	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Somewhat disagree (4)	Disagree (5)	Strongly disagree (6)
I always evaluate my social interactions with others after they occur. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend a great deal of time thinking about my positive and negative characteristics. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like evaluating other people's plans. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often compare myself with other people. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend a lot of time thinking about how others could improve themselves. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often critique work done by myself and others. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel that I am being evaluated by others. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a critical person. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am very self-critical and self-conscious about what I am saying. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often think that other people's choices and decisions are wrong. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I always analyse the conversations that I have had with others after they occur. (11)

When I meet a new person, I usually evaluate how well he or she is doing on various dimensions (e.g. looks, achievements, social status, clothes) (12)

End of Block: Block 7

---

Start of Block: Final section



Q21 (d)

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I would like to explore strange places. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do frightening things. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like new and exciting experiences even if I have to break the rules. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like friends who are exciting and unpredictable. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

---

**Thank you for completing the survey**

End of Block: Final section

---

## Paper 5: Study 2 Questionnaire

**Note:** The content of the questionnaire in Study 2 is the same as in Study 1 with the addition of the items of the P-MMU scale, inserted into the questionnaire immediately after the media use questions. For reasons of brevity, only the P-MMU scale items are included here.

### Q17 Comfort with multitasking

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is something which comes naturally to me. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm just good at multitasking with media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, multitasking with media is habitual behaviour. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable when I am media multitasking. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q18 Compulsive addictive**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is addictive. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel a constant compulsion to multitask with media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media is compulsive. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please tick disagree for this statement. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Skip To: End of Block If Compulsive addictive != Please tick disagree for this statement. [ Disagree ]

Page Break



**Q19 Multi-media channel preference**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I like switching back and forth between different media. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to juggle between media. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like having multiple streams of media stimulation. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to do more than one media activity at a time. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q20 Convenience**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Technology nowadays makes media multitasking effortless. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to multitask with media in many different locations. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking is effortless with portable devices. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to navigate between media when I am multitasking. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break





**Q21 Emotional gratification**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking is enjoyable. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media to relax. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media keeps me company. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking makes me feel good. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q22 Social benefits**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking helps me to feel connected with my friends and family. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I multitask with media I feel closer to other people. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me feel available for my friends and family. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media gives me a sense of belonging. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q23 Effectiveness and efficiency**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking saves me time. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media makes me more productive. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me get things done quickly. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can get more done when I multitask with media. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break



**Q24 Information and knowledge**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
When media multitasking, I can get instant access to information. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking allows me to see the 'bigger picture'. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking gives me different points of view. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I multitask with media so that I can gain knowledge. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break



**Q25 Assimilation**

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
Media multitasking helps me to manage information. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking helps me absorb the media information bombarded at me. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Media multitasking helps me to filter media content. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multitasking with media helps me to make sense of information. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Main

Analysis - supplementary detail:

Study 1

Measurement or outer model:

Reliability: is assessed by examining the internal consistency, composite reliability and outer loadings associated with the scales.

Collinearity:

Inspection of the 'Collinearity Statistics (VIF)' table shows that all VIF values are <3.3 indicating no evidence of lateral collinearity (or common method bias) (*c.f.* Technical appendix 4. p.143)

Collinearity Statistics (VIF)

	Latent variable 1	Assess	Loco
Latent variable 1			
Assess	1.328		
Loco	1.328		

Internal consistency:

Following purification, removing one item from assessment (assess1) and two items from locomotion (loco1; loco3), Cronbach's Alpha exceeds the recommended .7 benchmark (Hair *et al.*, 2017) for locomotion and assessment, hence internal consistency is confirmed (*c.f.* Technical appendix 3, p.117). In addition, composite reliability indices exceed the benchmark of .7 (Fornell and Larcker, 1981), as indicated in the table (*c.f.* Technical appendix 3, p.117).

	Cronbach's Alpha	Composite Reliability
Assess	.922	.934
Loco	.931	.941

Outer loadings:

The results in the 'Outer and cross loadings' table indicate that the outer loadings of the remaining scale items to the intended dimension (**bold**) are all above the .7 benchmark (Hair *et al.*, 2010) and higher than the corresponding values with other constructs (*c.f.* Technical appendix 4, p.144).

### Outer and cross loadings

	Latent variable	Assess	Loco
MMI	1	.362	.312
Assess10	.190	<b>.693</b>	.396
Assess11	.264	<b>.738</b>	.356
Assess12	.207	<b>.707</b>	.335
Assess2	.325	<b>.801</b>	.438
Assess3	.335	<b>.800</b>	.456
Assess4	.237	<b>.718</b>	.269
Assess5	.271	<b>.761</b>	.339
Assess6	.263	<b>.788</b>	.352
Assess7	.313	<b>.788</b>	.389
Assess8	.290	<b>.738</b>	.416
Assess9	.229	<b>.704</b>	.315
Loco10	.283	.455	<b>.818</b>
Loco11	.229	.319	<b>.706</b>
Loco12	.318	.388	<b>.837</b>
Loco2	.229	.396	<b>.752</b>
Loco4	.242	.352	<b>.783</b>
Loco5	.218	.352	<b>.777</b>
Loco6	.194	.388	<b>.767</b>
Loco7	.236	.441	<b>.734</b>
Loco8	.227	.410	<b>.833</b>
Loco9	.236	.397	<b>.834</b>

Validity: is assessed by examining convergent validity and discriminant validity.

#### Convergent validity:

The values for AVE should be  $>.5$  benchmark. Study 1 analysis confirms that all items meet the  $>.5$  benchmark for AVE, confirming the convergent validity of the adopted scale (Bagozzi and Yi, 1988; Hair *et al.*, 2017) (*c.f.* Technical appendix 3, p.117)

	Average variance explained (AVE)
Latent variable	1
Assess	.562
Loco	.617

#### Discriminant validity:

In Study 1, the correlations for the scales are shown in the 'Outer and cross loadings' table. To establish discriminant validity, the corresponding values of items loadings should be higher for the construct they are linked to, than for any other construct (*c.f.* Technical appendix 3, p.117)

Fornell-Larcker criterion:

Inspection of both diagonal bold values representing the scales in the ‘Fornell-Larcker’ table, confirms discriminant validity (*c.f.* Technical appendix 3, p.117).

Fornell-Larcker

	Latent variable	Assess	Loco
Latent variable	1		
Assess	.362	<b>.750</b>	
Loco	.312	.497	<b>.785</b>

The Heterotrait-Monotrait ratio (HTMT):

The ‘HTMT’ table indicates that the criterion is met for both constructs Henseler (*c.f.* Technical appendix 4, p.146).

HTMT

	Latent variable 1	Assess	Loco
Latent variable 1			
Assess	.369		
Loco	.319	.531	

## Study 2

Measurement or outer model:

**Reliability:** is assessed by examining the internal consistency, composite reliability and outer loadings associated with the scales

Collinearity:

Prior to mediation and moderation analysis, collinearity is checked to ensure that it is not at a critical level - above 3 (Hair *et al.*, 2017). The ‘Collinearity’ table indicates that all variables are below 3 (Kock and Lynn, 2012) (*c.f.* Technical appendix 4, p.143).

Collinearity

	Multi
Assess	1.272
Assim	1.966
Ben	2.786
Comf	2.681
Compl	2.417
Conv	1.679
Eff	2.358
Grat	2.414
Inf	1.525
Loco	1.576
Multi	
Pref	2.634



Internal consistency:

Following purification, removing two items from assessment (assess1; assess9) and three items from locomotion (loco1; loco2; loco3), Cronbach's Alpha exceeds the recommended .7 benchmark (Hair *et al.*, 2017) for locomotion and assessment - hence internal consistency is confirmed. In addition, composite reliability indices exceed the respective benchmarks of .7 (Fornell and Larcker, 1981), as indicated (*c.f.* Technical appendix 3, p.117).

	Cronbach's Alpha	Composite Reliability (CR)
Assess	.918	.931
Assim	.880	.918
Ben	.938	.956
Comf	.955	.968
Compl	.907	.942
Conv	.864	.907
Eff	.973	.980
Grat	.839	.893
Inf	.889	.901
Loco	.921	.932
Multi	1	1
Pref	.936	.954

Outer and cross loadings:

The results in the 'Outer and cross loadings' table indicate that the outer loadings of the remaining scale items to the intended dimension (bold) are all above the .7 benchmark (Hair *et al.*, 2010) and higher than the corresponding values with other constructs (*c.f.* Technical appendix 4, p.144).

## Outer and cross loadings

	assess	assim	ben	comf	compl	conv	eff	grat	inf	loco	multi	pref
MMI2a	0.342	0.21	0.565	0.581	0.677	0.37	0.592	0.374	-0.038	0.137	1	0.567
assess10	<b>0.774</b>	0.205	0.294	0.133	0.216	0.116	0.216	0.224	0.186	0.156	0.239	0.105
assess11	<b>0.713</b>	0.191	0.211	0.103	0.234	0.127	0.11	0.172	0.196	0.194	0.202	0.161
assess12	<b>0.77</b>	0.232	0.258	0.087	0.236	0.101	0.18	0.278	0.154	0.233	0.266	0.039
assess2	<b>0.75</b>	0.246	0.213	0.064	0.222	0.065	0.156	0.181	0.221	0.203	0.206	0.052
assess3	<b>0.808</b>	0.381	0.248	0.062	0.23	0.14	0.189	0.282	0.247	0.305	0.221	0.078
assess4	<b>0.737</b>	0.116	0.187	0.14	0.33	0.128	0.163	0.17	0.135	0.103	0.248	0.101
assess5	<b>0.794</b>	0.224	0.335	0.186	0.387	0.145	0.28	0.248	0.14	0.232	0.312	0.169
assess6	<b>0.754</b>	0.201	0.237	0.247	0.292	0.21	0.237	0.206	0.207	0.261	0.341	0.17
assess7	<b>0.715</b>	0.112	0.186	0.061	0.152	0.106	0.093	0.137	0.14	0.172	0.213	0.106
assess8	<b>0.768</b>	0.203	0.218	0.193	0.321	0.14	0.198	0.177	0.16	0.231	0.296	0.176
assim1	0.252	<b>0.865</b>	0.43	0.205	0.268	0.387	0.278	0.589	0.464	0.42	0.173	0.257
assim2	0.202	<b>0.863</b>	0.43	0.172	0.196	0.301	0.202	0.523	0.429	0.403	0.17	0.178
assim3	0.253	<b>0.862</b>	0.386	0.201	0.197	0.32	0.287	0.513	0.447	0.412	0.19	0.201
assim4	0.269	<b>0.842</b>	0.361	0.25	0.234	0.335	0.297	0.52	0.506	0.344	0.188	0.235
ben1	0.258	0.436	<b>0.927</b>	0.556	0.553	0.352	0.613	0.542	0.325	0.35	0.508	0.581
ben2	0.324	0.467	<b>0.925</b>	0.532	0.553	0.381	0.541	0.544	0.343	0.326	0.505	0.605
ben3	0.283	0.399	<b>0.91</b>	0.549	0.575	0.338	0.603	0.493	0.291	0.3	0.505	0.622
ben4	0.31	0.42	<b>0.911</b>	0.49	0.554	0.338	0.517	0.546	0.246	0.292	0.555	0.576
comf1	0.177	0.192	0.544	<b>0.95</b>	0.553	0.418	0.593	0.296	0.108	0.238	0.528	0.697
comf2	0.177	0.273	0.53	<b>0.92</b>	0.524	0.443	0.623	0.289	0.113	0.208	0.531	0.635
comf3	0.18	0.214	0.545	<b>0.933</b>	0.615	0.377	0.599	0.288	0.05	0.221	0.556	0.657
comf4	0.131	0.224	0.552	<b>0.952</b>	0.609	0.456	0.61	0.33	0.043	0.248	0.564	0.694
comp1	0.285	0.21	0.557	0.594	<b>0.91</b>	0.328	0.631	0.344	-0.003	0.2	0.62	0.603
comp2	0.365	0.262	0.572	0.549	<b>0.921</b>	0.266	0.596	0.402	0.081	0.167	0.638	0.533
comp3	0.322	0.245	0.546	0.548	<b>0.923</b>	0.315	0.569	0.365	0.038	0.199	0.605	0.525
conv1	0.038	0.34	0.282	0.342	0.211	<b>0.843</b>	0.269	0.411	0.196	0.316	0.264	0.356
conv2	0.21	0.334	0.368	0.402	0.354	<b>0.806</b>	0.43	0.381	0.102	0.389	0.381	0.37
conv3	0.126	0.302	0.285	0.384	0.26	<b>0.863</b>	0.201	0.407	0.186	0.366	0.308	0.335
conv4	0.179	0.342	0.341	0.379	0.261	<b>0.856</b>	0.231	0.468	0.255	0.423	0.276	0.334
eff1	0.23	0.283	0.597	0.602	0.616	0.306	<b>0.958</b>	0.264	0.089	0.137	0.547	0.587
eff2	0.212	0.317	0.615	0.632	0.654	0.335	<b>0.958</b>	0.334	0.086	0.191	0.593	0.572
eff3	0.266	0.277	0.589	0.616	0.616	0.323	<b>0.966</b>	0.295	0.083	0.135	0.567	0.564
eff4	0.252	0.316	0.576	0.631	0.622	0.351	<b>0.964</b>	0.364	0.087	0.171	0.571	0.559
gradt3	0.335	0.513	0.547	0.25	0.378	0.316	0.289	<b>0.785</b>	0.469	0.328	0.311	0.312
gradt4	0.217	0.563	0.518	0.273	0.348	0.458	0.274	<b>0.883</b>	0.414	0.47	0.303	0.331
grat1	0.171	0.496	0.422	0.306	0.303	0.45	0.294	<b>0.797</b>	0.429	0.35	0.31	0.374
grat2	0.192	0.478	0.408	0.226	0.297	0.403	0.219	<b>0.819</b>	0.329	0.335	0.31	0.276
inf1	0.152	0.404	0.256	0.099	0.063	0.227	0.086	0.408	<b>0.84</b>	0.304	-0.012	0.07
inf2	0.185	0.438	0.273	0.02	0.055	0.101	0.073	0.44	<b>0.849</b>	0.305	-0.061	0.106
inf3	0.234	0.454	0.314	0.044	0.012	0.188	0.057	0.438	<b>0.905</b>	0.323	-0.054	0.134
inf4	0.236	0.551	0.288	0.121	0.025	0.232	0.095	0.442	<b>0.869</b>	0.347	-0.007	0.119
loco10	0.341	0.439	0.388	0.246	0.254	0.339	0.146	0.397	0.325	<b>0.798</b>	0.178	0.23
loco11	0.164	0.387	0.278	0.233	0.172	0.399	0.176	0.378	0.208	<b>0.763</b>	0.139	0.202
loco12	0.215	0.391	0.254	0.208	0.206	0.378	0.135	0.419	0.333	<b>0.817</b>	0.154	0.142
loco4	0.251	0.333	0.257	0.185	0.144	0.337	0.118	0.333	0.345	<b>0.776</b>	0.088	0.183
loco5	0.143	0.302	0.213	0.16	0.084	0.305	0.083	0.227	0.268	<b>0.75</b>	0.013	0.184
loco6	0.195	0.357	0.265	0.161	0.176	0.359	0.113	0.387	0.265	<b>0.773</b>	0.099	0.151
loco7	0.179	0.326	0.225	0.194	0.133	0.364	0.154	0.309	0.287	<b>0.777</b>	0.065	0.152
loco8	0.237	0.275	0.211	0.126	0.132	0.343	0.055	0.328	0.269	<b>0.826</b>	0.059	0.106
loco9	0.221	0.399	0.295	0.177	0.102	0.322	0.158	0.382	0.299	<b>0.767</b>	0.125	0.135
pref1	0.144	0.258	0.603	0.678	0.554	0.33	0.535	0.363	0.114	0.18	0.521	<b>0.933</b>
pref2	0.159	0.298	0.644	0.632	0.529	0.389	0.563	0.395	0.177	0.229	0.508	<b>0.915</b>
pref3	0.135	0.175	0.549	0.632	0.57	0.393	0.506	0.326	0.086	0.203	0.536	<b>0.891</b>
pref4	0.134	0.199	0.579	0.676	0.553	0.407	0.569	0.356	0.083	0.167	0.511	<b>0.925</b>

Validity: is assessed by examining convergent validity and discriminant validity.

Convergent validity:

Study 2 analysis confirms that all items meet the >.5 benchmark for AVE (Bagozzi and Yi, 1988; Hair *et al.*, 2014), confirming the convergent validity of the adopted scale (*c.f.* Appendix 3, p.117)

Average variance extracted

	Average variance extracted (AVE)
Assess	.575
Assim	.736
Ben	.844
Comf	.882
Compl	.843
Conv	.708
Eff	.925
Grat	.676
Inf	.697
Loco	.605
Multi	1
Pref	.839

Discriminant validity:

To establish discriminant validity, the corresponding values of items loadings should be higher for the construct they are linked to, than for any other construct. In Study 2, cross loadings indicate that discriminant validity criteria are met (*c.f.* Technical appendix 3, p.117).

Fornell-Larcker criterion:

The Fornell-Larcker criterion (1981) is applied. Inspection of all diagonal bold values, representing the scales, confirms discriminant validity (*c.f.* Technical appendix 3, p.117; Paper 5, Appendix 3)

The Heterotrait-Monotrait ratio (HTMT):

The HTMT table indicates that the HTMT criterion is met for all constructs (*c.f.* Technical appendix 4, p.146).

Full results for all indirect pathways 'Available on request' (c.f. Paper 5, p.45):

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
assess -> assim -> multi	-0.006	-0.005	0.011	0.539	0.295
loco -> assim -> multi	-0.015	-0.014	0.026	0.583	0.28
assess -> ben -> multi	0.034	0.034	0.021	1.604	0.055
loco -> ben -> multi	0.039	0.039	0.024	1.609	0.054
assess -> comf -> multi	0.014	0.016	0.013	1.096	0.137
loco -> comf -> multi	0.026	0.03	0.021	1.21	0.113
<b>assess -&gt; compl -&gt; multi</b>	<b>0.089</b>	<b>0.092</b>	<b>0.028</b>	<b>3.148</b>	<b>0.001</b>
loco -> compl -> multi	0.032	0.032	0.024	1.342	0.09
assess -> conv -> multi	0.005	0.005	0.008	0.603	0.273
loco -> conv -> multi	0.041	0.04	0.031	1.33	0.092
assess -> eff -> multi	0.027	0.025	0.017	1.572	0.058
loco -> eff -> multi	0.012	0.011	0.011	1.165	0.122
assess -> grat -> multi	0.024	0.025	0.02	1.215	0.112
loco -> grat -> multi	0.06	0.06	0.033	1.791	0.037
assess -> inf -> multi	-0.029	-0.03	0.022	1.305	0.096
loco -> inf -> multi	-0.067	-0.07	0.025	2.659	0.004
assess -> pref -> multi	0.009	0.006	0.01	0.856	0.196
loco -> pref -> multi	0.015	0.014	0.015	0.99	0.161