The Perceived Believability of Exercise Blogs

By Elaine Ori

A dissertation submitted in partial fulfillment of the requirements of the degree of

Doctor of Philosophy

Faculty of Kinesiology, Sport and Recreation

University of Alberta

Abstract

The purpose of this dissertation was to examine how exercise bloggers represent themselves and exercise information online, how young adult women perceive the believability of an exercise blog message, and whether believability predicted exercise-related intentions, and finally, to explore which aspects of an exercise blog message are perceived as believable and personally relevant. Using a multiple methods design, this work included three studies: a quantitative content analysis, an experimental study using an associative-propositional duality model, and a qualitative descriptive study. The first study used quantitative content analysis to examine the features of 194 popular exercise blogs, with a focus on blog authors. Additionally, 722 content pages from the blogs were analyzed for content type, post format, and interactive features. Results suggest that only 16.4% of bloggers report having exercise certifications although 57% report being a fitness/exercise professional. Blogs were highly interactive including comments sections, and content sharing with other social media platforms. Blogs may provide an online space for like-minded exercisers to connect; however, authorship ambiguity may leave readers uncertain about whether blog content is a reliable source of exercise information.

The second study was an experimental design informed by the Associative-Propositional Evaluation model to examine both implicitly measured automatic believability, and explicitly measured self-reported perceptions of believability of an exercise blog article. A total of 141 females, aged 18-30 years, and residing in Canada were randomized to read either a factually incorrect or a factually correct blog article. Participants completed Go/No-Go tasks to measure automatically activated believability and evaluations, and questionnaires to explicitly measure believability, affective evaluations, and intentions to exercise. Participants did not show evidence of automatically activated believability of the content found in either blog article. However,

participants reading the factually correct article reported significantly greater explicit disbelief than those reading the factually incorrect article though this did not predict intentions to exercise. Being factually correct may not be an important component of message believability. Exercise professionals need to remain aware of the content of popular, online sources of information in an effort to curb misinformation.

The third study was a qualitative exploration of believability of emerging adult women after reading an exercise blog article. The purpose of this study was to explore which aspects of an exercise blog message are perceived as believable and personally relevant. Using a qualitative descriptive design, one-on-one interviews were completed by the principal investigator with ten women (M_{age} = 25.6 years) residing in a Western Canadian province, all of whom had or were currently attending university. All interviews were recorded and transcribed verbatim. Qualitative content analysis was used to examine and categorise the data, in line with a qualitative description design. Following data analysis, four themes were identified related to blog article believability: reasons for source preference, information relevance, selective believability, and projecting believability. Exercise blogs may provide an opportunity for some individuals to learn about, and diversify personal exercise opportunities. Additionally, participants expressed concern for others, and the potential of these media to contribute to negative outcomes for individuals without prior knowledge in the health disciplines.

Taken together, the three studies presented in this dissertation examine the characteristics of exercise blogs and bloggers, focusing on how the content may influence reader perceptions of believability and exercise intentions. Results of this work suggest that exercise blogs were not disbelieved and that emerging adult women perceive these media as a potential source of

misinformation. It may be necessary for qualified exercise professionals to remain diligent about the content of exercise blogs in order to address misinformation found online.

Preface

This dissertation is an original work by Elaine M. Ori. I led this research by developing the research questions, creating the coding criteria, leading the data collection process, and completing the data analysis. The data collection and coding processes were assisted by Dr. Maxine Myre. I prepared the initial manuscript, and Dr. Myre provided feedback for manuscript edits. Dr. Tanya Berry also contributed to manuscript edits and was the supervisory author on this work.

Chapter 4 of this dissertation has been accepted for publication and is currently in press as Ori, E. M., Berry, T. R., & Yun, L. (in press). The believability of exercise blogs among young adults. *Journal of Sport and Exercise Psychology.* Accepted August 15, 2020. Ethics approval was received from the University of Alberta Research Ethics Board (ID: Pro00087127, March 4, 2019). I designed the online experiment and measurement procedures, conducted data collection and analysis with the support of Dr. Berry. Data analysis was guided by Dr. Berry, and a portion of the data analysis was also assisted by Dr. Lira Yun. Participant recruitment included providing a participation incentive graciously provided by Dr. Berry. I wrote the original manuscript, with the assistance of Dr. Berry who was also the supervisory author. Both Dr. Berry and Dr. Yun provided edits to the manuscript.

Chapter 5 of this dissertation is currently under review as Ori, E. M., McHugh, T. L. F., & Berry, T. R. (2020). A qualitative exploration of exercise blog believability among emerging adult women. *Qualitative Research in Sport, Exercise and Health.* Submitted August 19, 2020. Ethics approval was received from the University of Alberta Research Ethics Board (ID: Pro00088815, February 25, 2019). I designed the study, collected the data, and analyzed and interpreted the data with the support of Dr. Tara-Leigh McHugh and Dr. Berry. Feedback on

study design and data collection and analysis was provided by Dr. McHugh. I prepared the original manuscript and Dr. McHugh and Dr. Berry provided feedback and edits to the manuscript. Dr. Berry was the supervisory author.

Acknowledgements

Years ago, when I set off on this doctoral journey, a colleague of mine offered some advice: this process would change me, and when I came through it on the other side, I would look back and see that not only did this apply to my work, but that my worldviews would be altered, too. As I think about the past five years I can see now, exactly what she meant. The process of undertaking this degree has left me with an invaluable set of experiences that have certainly changed my perspective. I have grown as a researcher, and as an individual through this process and while it hasn't been easy, it has been worth it.

Thank you to the many people that have supported me in this pursuit. First, to Dr. Tanya Berry for guiding me as my doctoral supervisor. Thank you sincerely for imparting in me the knowledge you have so willingly shared, expanding my perspectives, encouraging my ideas, guiding me through each step of the process, and imparting a confidence in me and my abilities. Through all of the ups and downs you have ensured that I have felt supported and that is a gift for which I will be forever grateful. To my supervisory committee Dr. Tara-Leigh McHugh and Dr. Terra Murray. Thank you, Dr. McHugh for imparting so much support and wisdom throughout this degree and in particular with my first qualitative study. Your guidance and direction have given me confidence in this area of research, which I hope to pursue in my future work. To Dr. Murray who may actually be responsible for this journey all along – thank you. Your guidance as my master's degree supervisor directed me to this doctoral degree, this body of work, and my continued interest in this field of study. I appreciate all of the support, wisdom, and direction that you have provided over the years. I am fortunate to have been guided by three incredible researchers and even more so, to have had the opportunity to have learned directly from such a remarkable supervisory committee.

I have treasured my time and experiences throughout this degree, including the opportunity to be part of such a wonderful group of graduate students in our lab. I have learned immensely from each of you, and am grateful to have had the chance to grow through this degree with you. To the many family, friends and colleagues that have offered advice, support, and kindness through the pursuit of this degree, thank you. You know who you are.

Finally, this degree would not have been possible without the unwavering support of those closest to me. To my parents, who were a constant source of encouragement and support, especially when I needed it most. To my daughter who came into the world while I was in pursuit of this degree. You have given me a push to the finish line, accepting the moments when I have had to study instead of play, and I hope that one day you too, will find your passion and pursue it to its fullest. Last but not least to my husband, Ken. There are no words to adequately express how much your love and support has meant through all of this. You have sacrificed so that I could pursue this dream. Thank you feels grossly inadequate, and yet I find myself with only these final words written in humble sincerity: thank you.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Communication through online digital sources such as social media has in recent history, proven beneficial for the dissemination of information across a vast array of networks and users in short amounts of time (Howell, 2013). This ability to spread information has proven valuable for sharing instantly, and in quantities never before seen in human history (Howell, 2013). Many online channels exist that allow content creators to display information and share with other users (e.g., online news, social media, instant messaging; Johnson & Kaye, 2015). Statistics Canada reports that 94% of households have internet access and 91% of Canadians over 15 years of age access the internet through at-home or mobile internet services (Statistics Canada, 2019a). Nearly half of internet users in Canada report spending at least 10 hours online per week in addition to streaming (e.g., Netflix) and gaming (Statistics Canada, 2019a). Although online digital information sharing has a wealth of benefits, *mis*information – content that is intentionally provocative or incomplete – may also travel at equally fast speeds through communication networks with potentially deleterious effects (Del Vicario et al., 2016; Howell, 2013). Health messaging, in particular, is of concern given its ability to reach the public in a myriad of forms from various platforms (internet, print, television). Previous research has shown that online social media may have an influence on related cognitions and behaviours (Vaterlaus et al., 2015). Online social media are often not perceived as credible (Johnson & Kaye, 2014; 2015) however, they remain popular sources and conduits of information.

In the current global atmosphere, the internet has become an indispensable tool for entertainment, information, and networking. While content on traditional media such as television, newspaper, and radio is often fact checked by professionals, the internet is not generally subject to such professional scrutiny (Flanagin & Metzger, 2007). Rather, the burden

of proof rests with the information consumer, leaving validity, reliability, and truthfulness of online social media content for consumers to determine on their own accord (Han, 2018). Previously, traditional media such as newspapers, magazines, or television offered a top-down approach to information purveyance whereby an authority figure or news outlet communicated content that was presumed to be sound, factual, and reliable (Metzger & Flanagin, 2013; Riffe, Lacy, & Fico, Frederick, 2008). In recent years, however, two-way communication has become highly popular with the explosion of social computing, allowing individuals to communicate over the internet in real time, and providing instantaneous information sharing (Howell, 2013; Metzger, Miriam & Flanagin, Andrew, 2013). Termed 'social media', these peer-to-peer networks differ from traditional one-way media in that they are user-generated, and are not subject to information verification (Metzger, Miriam & Flanagin, Andrew, 2013; Neubaum & Krämer, 2014). In this way, internet users are responsible for evaluating online information on their own, leaving information consumers to assess whether or not information encountered online is valid and reliable (Metzger, Miriam & Flanagin, Andrew, 2013).

Previous work suggests that most social media users have little control over the content they view because social media platforms make use of algorithms which populate personal feeds with content related to previous search history, personal and peer interests, engagement, or paid advertisements (Kim & Dennis, 2019). Further, social media platforms are designed to optimize each user's experience such as displaying content that matches previous engagement (i.e., shares, likes, searches, purchases), creating an echo chamber unique to each user (Kim & Dennis, 2019). Social media is often used for fun and enjoyment, as a form of entertainment (Johnson & Kaye, 2015). When individuals consume social media for such purposes, they are less likely to attend to the content critically, and become less mindful of the information they are consuming

(Thatcher et al., 2018). This may contribute to increased dissemination by way of 'sharing' social media content with followers, further propagating potential misinformation. Among social media platforms, blogs are popular, self-published websites; they are widespread and may be created by any person, on any subject (Neubaum & Krämer, 2014). They are often used for both communication purposes and to offer guidance, combining personal stories with information (Kaye & Johnson, 2011). Blogs are often used as primary sources of information, disseminating content through other social media platforms such as Twitter, Instagram, and Facebook (Crestodina, 2018). Given this ease of content dispersion, it is possible for any blogger to quickly gain an audience using popular social media platforms when sharing their blog posts.

Blog users often consider blogs more credible than traditional media or other websites (Kaye & Johnson, 2011). Thought to provide alternative perspectives to traditional media (e.g., news media), blogs often address subject matter from the subjective view of the author, lacking the objectivity associated with traditional media sources (Johnson & Kaye, 2015). For this reason however, many blog users prefer blogs as an information source (Johnson & Kaye, 2015). Yet unlike other forms of professionally controlled and moderated media (i.e. corporate advertisements, professional news outlets), blogs may not be subject to professional gatekeepers, editors, or peer review (Cosenza et al., 2015). Despite this potential for misinformation, internet information seekers are likely to look for information that conforms to previously held beliefs while avoiding information that contradicts such previously held beliefs (Kim & Dennis, 2019; Metzger, Miriam & Flanagin, Andrew, 2013). Research examining the uses and preferences of blogs as an information source suggest that confirmation of personal perspectives may be an important contributor to blog use (Johnson & Kaye, 2015).

Blogs are often accessed by readers in order to satisfy a number of interests including entertainment, self-expression, and advice (Johnson & Kaye, 2015). When it comes to health content, many internet users seek information from online sources including blogs (Lagoe & Atkin, 2015). For some individuals, blogs may be a preferred source of health information. In one study, after participants read a health blog, readers demonstrated more content recall, were more able to process the information, and found blog content more memorable than when viewing institutional public health websites (Neubaum & Krämer, 2014). Given the unregulated nature of social media however, blogs may contribute to misinformation, and uninformed promotion of health advice (Kaye & Johnson, 2011). For example, healthy living blogs claim to promote advice and information about lifestyle behaviours (exercise, nutrition) that contribute to improved health (Boepple & Thompson, 2014). With the proliferation of information online, it is possible that those seeking exercise-related content may be subjected to incorrect or inaccurate advice, portrayed by blogs. Yet there is a dearth of research evaluating what content is circulated on exercise blogs, who owns and creates this content, and how it is perceived by readers. This dissertation work therefore examines the various aspects of exercise blogs that may contribute to how readers perceive the content they read, and whether this may contribute to improved or lowered intentions to engage in exercise.

Dissertation Research

Using a multiple methods approach, three separate studies, each with a unique focus and methodology were completed to assess the type of exercise-related content found on popular exercise blogs, and how this content may influence readers. Firstly, a quantitative content analysis was completed, examining the most popular English language fitness and exercise blogs at the time of data collection. Blog website features, content focus, and authorship data were

collected and examined using quantitative coding. These data were then analyzed to examine relationships between the various blog, content, and authorship features to explain how popular exercise and fitness blogs are portrayed online.

Secondly, an experimental study made use of the Associative-Propositional Evaluation (APE) Model assessed reader perceptions of believability, affective evaluations, and intentions towards exercise, after reading an exercise blog amongst a sample of young adult women. Incorporating the APE model allowed for a context-specific assessment of believability and affective automatic associations. This propositional duality model also provides some insight into the contributions these variables make to exercise intentions. With a focus on believability, this study provides a new perspective on how readers perceive the believability of exercise blog information. Modeled after limited work in the area of exercise message believability, this design examined automatic and propositional perceptions of an exercise blog message.

The third study used a qualitative descriptive design to explore which online resources participants prefer when looking for exercise information, and the underlying reasons for selecting particular sources. Further, the study explored participant perceptions of believability of exercise blog content, focusing on which aspects of an exercise blog may be perceived as believable, and how those perceptions may contribute to intending to exercise. Given that exercise blogs are largely understudied in the literature, the use of a qualitative descriptive design allowed for an opportunity to explore an under evaluated phenomenon.

Rationale

To date, no known studies have examined the influence of exercise blog messaging on perceptions of believability, reader evaluations, nor on intentions to exercise. An awareness of the factors and personal perceptions that contribute to exercise blog believability may assist

health promoters in creating more effective exercise promoting material grounded in reliable, evidence-based information. It is also prudent for exercise promoters to understand the influence exercise blogs may have on readers perceptions of believability, if attempts to provide evidence-informed information are to have an effect. Therefore, this research sought to answer the following research questions:

1) How is exercise represented on popular exercise blogs, and how do blog authors represent themselves in the online environment?

2) Do individuals reading an exercise blog message explicitly believe the information contained within the message, regardless of whether the information is factual or not?

3) How does the perception of believability affect exercise-related affective evaluations and intentions?

3) Using qualitative interviews, what factors do readers report as contributors to (dis)believing the information presented to them from exercise bloggers?

4) What components of an exercise blog create personal relevance to the messages found on believable blog messages?

To answer the research questions, the research made use of a three-study design, whereby a series of studies each separately addressed the research problem (Richards & Morse, 2007). This design allowed for an in-depth examination of the phenomena by capturing both the wider views of exercise blog believability as well as the complexity of individual perspectives related to the blogs (Zhang & Creswell, 2013).

Exercise Intentions

Intentions to engage in exercise have been examined broadly in the literature evaluating the influence of exercise-promoting messages (Berry et al., 2011; Berry & Shields, 2014;

Mulgrew et al., 2018). Social cognitive theories of behaviour such as the Theory of Planned Behaviour suggest that behavioural intentions are a direct antecedent to the associated behaviour (Ajzen, 1991). Behavioural intentions attempt to capture factors that influence behaviour such as the level of effort an individual is willing to expend, or the amount of planning the individual is willing to undertake, in order to perform a behaviour (Ajzen, 1991). However, studies examining the relationship between physical activity and exercise intentions with behaviour have been inconsistent with regard to measurement, making it difficult to compare studies examining this construct (Rhodes & Rebar, 2017). Research dichotomizing the behavioural intention construct as either intend or do not intend to exercise, have found a small-to-medium effect of intentions on exercise behaviour (Rhodes & Rebar, 2017). In contrast, studies that have measured intention by strength of commitment using a Likert scale with bipolar tails such as strongly agree/strongly disagree, have found this approach to be a more direct predictor of physical activity and exercise behaviours, with significantly larger effects (Rhodes & Rebar, 2017). Further, Rhodes and Rebar (2017) note that the relationship between physical activity and other social cognitive variables such as affective evaluations are mediated more effectively by measurements of behavioural intention strength rather than simple dichotomous measures of the construct. In summary, intentions better predict behaviour, and is a better mediator between various social cognitive constructs and behaviour, when assessed by the strength of the intention. Given the potential for exercise intentions to predict exercise behaviour, it is of value to examine the effects of exercise media such as exercise blogs, which may have an influence on exercise intentions.

Exercise Blogs

Exercise blogs may act as repositories of exercise messaging and information, with the potential to influence thoughts and intentions. However, blogs may not always provide accurate,

evidence-informed information. In the online world, it is possible for any person to claim expertise, which can be a significant cause for misinformation (Thon & Jucks, 2017). Content expertise and education are not requirements of blog ownership or message purveyance (Kaye & Johnson, 2011). Many exercise blog owners and authors are considered-by themselves or by others–to be purveyors of health and fitness information (Carey & Hicks-Rocha, 2017; Concannon, 2016; Langley, 2017), despite often lacking education or certification credentials in a health or fitness field (Carey & Hicks-Rocha, 2017; Farrington, 2015; Fit4Mom, 2017). Muddying the waters, findings from a web survey revealed that among physical activity researchers and practitioners, a majority preferred websites including blog posts to learn about, source, and share information related to physical activity (Jake-Schoffman et al., 2018). Previous work has demonstrated that user perceptions of credibility may be established in part by perceived source expertise (Thon & Jucks, 2017). In this way, it is possible for misinformation to become legitimized as authority figures on various topics become one of many in a sea of social media 'experts'. Despite these factors, health information seekers are highly dependent on advice given by experts, whether they are qualified or perceived and interpreted as such; source cues such as perceived expertise may not be readily available or verifiable on such platforms (Thon & Jucks, 2017). Readers may then perceive that social media is a legitimate source of exercise content given that exercise blogs are owned and used by professionals and the general public, alike. However, research examining the content of healthy living blogs has shown that they attempt to normalize unhealthy behaviours such as body objectification, and overweight stigmatization (Boepple & Thompson, 2014). Subsequently, a content analysis evaluating the content of fitness inspiration blogs centered around excessive exercise, using exercise for appearance outcomes, and weight stigmatization (Boepple et al., 2016). Whether for information

seeking or entertainment purposes, the unregulated nature of blogs in particular health and exercise blogs, may not be reliable sources of health-promoting information.

Social Media and Exercise

The internet and social media are a common source of information for a variety of topics including exercise (Basch et al., 2018; Jake-Schoffman et al., 2018; Ori & Berry, 2020). Individuals viewing exercise information may do so by either actively searching for the desired information, or by finding the information while passively reading through online content. University students actively searching for exercise information have reported a preference for social media as a medium (Ori & Berry, 2020). Even physical activity researchers and practitioners have reported using social media as both a source and dissemination tool for physical activity information (Jake-Schoffman et al., 2018). While practitioners (e.g., personal fitness trainers) reported the use of a broader number of platforms than researchers, both practitioners and researchers between 20-29 years were most likely to use various social media platforms to seek, receive, and share physical activity information (Jake-Schoffman et al., 2018).

Extant research suggests that health information seekers make use of the internet as a source of health information including to learn about exercise (Cohall et al., 2011; Huberty et al., 2013; Medlock et al., 2015). Yet few studies have assessed online physical activity or exercise related information seeking specifically, and among those that have, the focus has been on special populations such as pregnant women and senior citizens (Harada et al., 2016; Huberty et al., 2013; Medlock et al., 2015). Some research suggests that exercise information seeking may be unintentional, and that the public may search topics of a related interest and subsequently find more precise, specific information (Teodoro & Naaman, 2013). Among adults aged 21-45 years, one study revealed that Twitter users learned about fitness and exercise when they inadvertently

"stumbled upon it" (Teodoro & Naaman, 2013). In this way, Twitter was considered a source of education about an exercise topic; a means of obtaining health-related information including links to bloggers, in order to learn more about how to influence their own health behaviours (Teodoro & Naaman, 2013). This is similar to recent findings that suggest physically active individuals will seek out and form online social communities that share similar values (Liu & Young, 2018). Social media may then encourage exercise among those with online communities that value and encourage exercise uptake and adherence, regardless of whether online exercise-related information was sought intentionally or discovered by chance.

Exercise-related social media communities may be formed by an individual posting about their own exercise pursuits or commenting on another individual's exercise post. However, the social nature of exercise-related social media has been considered a barrier to engaging in the promoted behaviours as individuals post online about intentions to engaging in exercise although this is not later actualized (Vaterlaus et al., 2015). This is similar to other work in the exercise domains that suggest exercise intentions do not always result in exercise behaviour (Rhodes & Rebar, 2017). Several studies have shown that viewing exercise-related social media did not result in exercise uptake (Vaterlaus et al., 2015; Vega, 2018). It may be that while knowledge and education can be obtained through online activities such as social media posts and discussions, social media consumers may perceive barriers to engaging in exercise, or be unable or unsure of how to put such knowledge into practice (Vega, 2018; Zhou & Krishnan, 2019). Subsequently, social media use may also displace time otherwise spent in active pursuits (Shimoga, Erlyana, Rebello, 2019; Vaterlaus et al., 2015). It may be that social media may influence intentions to exercise while simultaneously drawing attention to indiviual limitations of engaging in the promoted exercise. Work by Vaterlaus et al., also suggests that viewing exercise-

related social media may be associated with increasing frustration or annoyance by users who feel that social media exercise enthusiasts posting unrealistic self-images, do so in an attempt to gain attention, rather than for exercise promotion (2015). In this way, exercise-related social media function as a barrier to exercise as it can be perceived as a form of body-shaming or over-simplifying processes of consistent exercise and goal achievement (Vaterlaus et al., 2015). Exercise-related social media has also been associated with lowered mood state, decreased self-image, increased self-objectification, and increased body dissatisfaction (Prichard et al., 2018, 2020; Robinson et al., 2017; Tiggemann & Zaccardo, 2015). These deleterious effects may be the result of self-comparison with exercise posts furthering the idea that for some individuals, the promoted outcomes associated with exercise such as achieving a 'fit' or 'athletic' physique, are not achievable (Robinson et al., 2017). Other studies have reported that social media intended to promote exercise may be misleading or damaging, such as quick fix schemes that may contribute to health concerns (Vaterlaus et al., 2015). For example, promises of fast results by following an extreme exercise regimen may result in injuries. It may be that the nature of exercise-based social media, especially those aimed at inspiring others, contributes to lowered perceptions of body image, or lowered perceptions of ability to achieve promoted outcomes, while simultaneously promoting extreme or unhealthy approaches to goal attainment (Tiggemann & Zaccardo, 2015; Vaterlaus et al., 2015).

Conversely, research has also shown that some social media may positively influence intentions to exercise (Mulgrew et al., 2018; Robinson et al., 2017). Specifically, experimental work examining fitness inspiration (i.e., 'fitspiration' or 'fitspo') social media has found that these media increased intentions to exercise among women (Mulgrew et al., 2018; Robinson et al., 2017). In one study, women attending university reported intentions to exercise after viewing

social media images depicting one of: thin ideal, athletic ideal, or muscular ideal groups (Robinson et al., 2017). Findings showed that athletic ideal images contributed to more favourable exercise intentions than thin ideal images (Robinson et al., 2017). Similarly, women aged 17-35 years were exposed to either images showing appearance ideals, images depicting women participating in sport, or a set of control images of landscapes (Mulgrew et al., 2018). Participants viewing the sport participation images reported significantly higher exercise intentions than those in the control condition, though there was no significant difference for exercise intentions between viewing the sport participation and idealized appearance images (Mulgrew et al., 2018). It may be that the portrayal of sport as well as images of idealized physique are both capable of portraying exercise outcomes to viewers. It is possible that for some, viewing exercise-related social media provides motivation, knowledge, or awareness of exercise or new modalities, or that it emphasizes possible outcomes (i.e., fit/athletic ideal) that are desirable for some individuals.

Despite the mixed effects of exercise-related social media on user cognitions, engagement with research-based social media interventions do not accurately represent the online behaviours of social media users in the natural environment. Given the growing reach and influence of social media in every day life, as well as the increasing usage of social media across all populations worldwide (Statista, 2020), greater attention is needed to determine how this form of information sharing affects individuals, and how it is used by consumers outside of research-based interventions. Further, given the mixed results of previous work examining exercise-based social media on related thoughts, intentions and behaviour, more work is needed to understand how social media may influence exercise perceptions among various populations.

Emerging Adults

Emerging adults are lifelong digital media users, and make up the largest group of internet users worldwide to date (SEMRush, 2019). The majority of these individuals aged ~18-29 years, have spent their entire lives surrounded by digital technologies of the late 20th and early 21st centuries including computers, the internet, and cell phones (McGloin et al., 2016; Prensky, 2001). Social media use is considered ubiquitous among this population; 88% of adults aged 18-29 years use social media (Smith & Anderson, 2018). In Canada, emerging adults dominate social media use, with similar usage rates for both men and women (We Are Social, DataReportal, et al., 2020). Due to their lifelong familiarity with digital media, emerging adults are highly experienced with the internet as a source of information (Percheski & Hargittai, 2011; Vaterlaus et al., 2015). However, little is known about the online health seeking behaviours of this population (McGloin et al., 2016; Percheski & Hargittai, 2011; Vaterlaus et al., 2015). The majority of undergraduate students are emerging adults and as many as 80% of university students report using the internet for health information seeking purposes (Ori & Berry, 2020; Percheski & Hargittai, 2011). Post-secondary students are a unique population who experience significant declines in physical activity participation during the transition from high school to university (Cullen et al., 1999). Further, individuals who are insufficiently active as university students report similar or lower levels of physical activity participation upon graduation (Sparling & Snow, 2002). However, students who do report meeting physical activity recommendations while attending university, are likely to continue regular activity in years following graduation (Sparling & Snow, 2002). This age range is also associated with significant life changes including making personal health decisions often for the first time on their own (Basch et al., 2018).

Women

Current trends suggest that girls aged 5 – 17 years are half as likely as boys to meet physical activity guidelines; only 26% of young girls achieve the recommended amounts of physical activity, a rate which falls to 16% as they enter into emerging adulthood at 18 years of age (Statistics Canada, 2019b). Previous studies have found that emerging adult women are more likely to seek health information online than males (Percheski & Hargittai, 2011; Atkinson, Saperstein & Pleis, 2009), as women are more likely to be concerned with their health on a daily basis (McGloin et al., 2016). In this vein, extant research suggests that women attending university make use of more sources than men when looking for physical activity and exercise information, and that women will seek physical activity and exercise information for health purposes primarily, followed by appearance-based reasons such as weight loss or improving muscle tone (Ori & Berry, 2020). Further, women are more often the target of online exercise-related social media than men (Boepple et al., 2016; Tiggemann & Zaccardo, 2018). This may be due to their tendency to act as caregivers, and therefore seek health-related information including about exercise, not only for themselves but for others in their care (Lagoe & Atkin, 2015). Taken together, women may be subjected to more information in the online environment both by way of information seeking and via targeted promotion efforts. It is therefore important to determine how women perceive online exercise-related social media, and whether it influences exercise-related cognitions.

Believability

Credibility is a user judgement, often referring to the trustworthiness, believability, and authority of the source (Johnson & Kaye, 2009). Much of the current literature has examined credibility as a singular construct, and most studies have examined credibility as it pertains to the source (e.g. author, publisher; Berry & Shields, 2014; Han, 2018; Westerman, Spence, & Van

Der Heide, 2014) and the medium (e.g., ease of use, attractiveness of format; Metzger, 2007). Various types of media have garnered medium-specific criteria for judgements of credibility such as those specifically related to websites and blogs (Appelman & Sundar, 2016). These include such website-specific features as webpage layout, timeliness of publication, and web address for the site, as well as other website-specific features (Dochterman & Stamp, 2010). For example, Chung, Nam, and Stefanone (2012) examined the influence of technological factors on reader perceptions of credibility noting that website interactivity, multimediality and hypertextuality are unique features exclusive to online sources. These features account for two-way communication between the reader and source (interactivity), simultaneous dissemination of information through multiple formats such as text, audio, and video, combined within one article (multimediality), and ease of ability for the reader to seek out further information on the subject via hyperlinks embedded within an article (hypertexuality; Chung et al., 2012). Despite these varied and source-specific measurements of credibility, work in the domain of exercise media and cognition suggests that believability may warrant examination as a unique construct (Berry et al., 2011). Whereas credibility is concerned with trustworthiness of the source such as author or pusblisher (Johnson & Kaye, 2009) believability refers to the content of a message and its perceptions of truthfulness to the reader (O'Cass & Griffin, 2006).

Extant research has shown that health-related information such as exercise is most often obtained through online sources, in particular amongst university-aged young adults (Percheski & Hargittai, 2011; Kwan, Arbour-Nicitopoulos, Lowe, Taman, & Faulkner, 2010; Vaterlaus, Patten, Roche, & Young, 2015). Due to the nature of social media, it is inherently difficult for users to assess content veracity (Wang et al., 2019). Given the opportunity for misinformation to circulate via these sources, it is of value to understand the underlying reasons for message

believability of exercise blogs. Perhaps a key step in understanding the impact of any exercise-promoting message however, is understanding whether it is – or is not – believed by the reader. Exercise-related message believability has been shown to precede intentions to exercise (Berry et al., 2011). Low levels of physical activity in Canada (Rhodes et al., 2017) are related to long-term health outcomes such as risk for cancers and cardiovascular disease (Canadian Society for Exercise Physiology, 2012). It is therefore important to understand how users perceive online media of exercise-related information in terms of believability, and how these perceptions may influence exercise intentions. As message believability may contribute to exercise intentions, heath promoters may benefit from understanding if and why exercise blogs are to be believed and potentially acted upon. While there is limited research on the influence of believability on exercise-related cognitions, one study demonstrated that believing an exercise advertisement predicted exercise-related evaluations when viewing a health-based exercise advertisement, and negatively predicted intentions in an appearance-based exercise advertisement (Berry et al., 2011). This influence of believability on both evaluations and intentions is important, given that both evaluations and intentions have repeatedly been shown to predict exercise behaviour (Courneya et al., 2006; Rhodes & Kates, 2015). It is possible then, that increased believability of exercise and fitness blog messaging may contribute indirectly, to behavioural change, through behavioural antecedents such as evaluations and intentions. Given the unregulated and often times unsubstantiated claims of online information, there is a potential for such sources of information to have detrimental effects on readers (Jiang & Street, 2017) such as extreme exercise regimens or inversely, disinterest in participating in exercise activities due to lowered perceptions of ability. It is therefore important for public health professionals to not only be

aware of the information portrayed by these sources, but also the affective, cognitive, and behavioural outcomes stemming from engagement with such sources.

Misinformation

As Metzger and Flanagin (2013) suggest, information proliferation in the online environment removes the likelihood that content is moderated by professional gatekeepers-those professionally trained to fact check and monitor content veracity. The concept of disintermediation may also contribute to the potential for misinformation to circulate as individuals can source unfiltered content whenever and from whomever they choose without the need for an intermediary such as a content expert (i.e., health professional; Eysenbach 2007). However, it may be increasingly challenging for individuals to evaluate and source information that is relevant to their interests, given the diversity and plethora of content available online (Schmitt et al., 2018). This may contribute to information overload whereby the amount of information exceeds an individual's ability to process the information (Eppler & Mengis, 2004). To manage this abundance of unfiltered information, cognitive short cuts or heuristics may be used by consumers, in an attempt to determine what content is relevant and reliable (Metzger, & Flanagin, 2013). Consumers may then assess sources for items such as reputation or credentials of the author wherein a familiar name, a website with abundant positive user engagement (i.e., positive reviews or comments), or someone that is a stated expert, is deemed more reliable (Metzger & Flanagin, 2013). Website design such as navigability, layout, well-presented information, and timeliness of publication may also contribute to positive evaluations regardless of the content of the website (Metzger & Flanagin, 2013). Taken together, these various aspects of engaging with online sources of information may contribute to evaluations of trust, credibility or believability for readers. Extant research has shown that web users are unlikely or often

unwilling to exert the cognitive effort required to verify information content (Metzger & Flanagin, 2013). In the absence of verification strategies, users may then believe the information contained within highly navigable, popular, aesthetically pleasing blogs, deceived by cognitive short cuts. For this reason, it is important to evaluate whether information content itself is perceived as believable by readers and to what extent. Understanding whether exercise blog content is believable may provide opportunity for future research and health promotion professionals alike, to hone in on effective exercise promotion for safe, reliable, evidence-informed content while combatting misinformation.

Chapter 2: Methods & Procedures

Using a multiple methods approach, this dissertation examined the content of popular exercise blogs, whether an exercise blog article was perceived as believable to a sample of young, adult women, and how this may have influenced exercise intentions. A quantitative content analysis examined how bloggers represented themselves in the online environment, reported qualifications, focus of information, and format of presentation. An experimental study used one representative blog article from the content analysis, to determine whether readers believe or disbelieve the information portrayed within the article. A qualitative study explored the various aspects of a blog article and how those features are perceived by readers for believability and personal relevance. Collectively, these studies provided multiple perspectives into the ways in which exercise blogs are disseminated and perceived by readers.

Content Analysis

In human communication, content may be the result of conditions or experiences, offering insight into the circumstances that informed the communicator (Riffe, Lacy, & Fico, 2005). For example, exercise blog content may be the result of the blogger's personal experience with exercise either personally or as an exercise professional. The blogger may then create content that aligns with that experience. This may also represent current trends or popularized topics that gain wide audience attention at the time of creation and publication (Riffe, Lacy, & Fico, 2005). The content of any communication source may act as an antecedent for a variety of cognitive processes such as to gain knowledge, or to influence elaboration about a topic (Riffe, Lacy, & Fico, 2005). Content may have the ability to influence reader evaluations though this influence may also be a result of the mix of certain characteristics such as message features in combination with the message (Riffe, Lacy, & Fico, 2005). For example, message framing (gain

versus loss frame) may influence reader perceptions of credibility (Borah & Xiao, 2018). Analysis of content may contribute to identifying such message features, and subsequently act as a starting point for further, more in-depth or experimental research in a related area (Boepple & Thompson, 2014).

Quantitative Content Analysis

In order to determine the amount and precise content of popular exercise blogs, a quantitative content analysis was conducted. Documents containing text and images that are produced, shared and publicly available may be readily used for systematic evaluation (Bowen, 2009). Quantitative content analyses often draw from a representative sample, systematically categorizing content features based on theoretically-based rules (Riffe et al., 2008). Relationships may then be examined statistically using descriptive and predictive analyses (Riffe et al., 2008). Traditional content analyses have been used to examine advertisements, television, newspapers, and public documents (Allen, 2014; Bowen, 2009). In recent years however, this form of data collection has expanded to the internet given the broad scope and utility of content analysis (Allen, 2014; Boepple et al., 2016; Tiggemann & Zaccardo, 2018). Despite recent publications examining the content of various types of blogs (Boepple et al., 2016; Boepple & Thompson, 2014; Shapira et al., 2017; Shema et al., 2015), there is no known analysis of the content of exercise blogs. Findings from this study were used to determine a blog article for use within the experimental and qualitative studies examining the effects of blog reading on perceptions of believability.

Associative-Propositional Duality Theories of Cognition

Associative-propositional duality theories have been used for evaluating the effects of exercise messaging on related cognitions and intentions to exercise (Berry et al., 2011; Berry &

Shields, 2014). These theories have contributed significantly to research in all domains of social psychology (Gawronski et al., 2019; Gawronski & Creighton, 2013). By their nature, associative-propositional duality theories are concerned with two classes of thought: automatic and controlled thought processes (Gawronski & Creighton, 2013). Automatic thought processes occur as a result of fast, spontaneously activated associations with a given object (Gawronski et al., 2019), which may be a result of personal relevance, previous experiences or prior conscious thoughts that have become associated with an object over time (Calitri et al., 2009; Gawronski et al., 2019). Conversely, controlled thought processes are those cognitions that arise from validated, reflective propositions about the activated links (Gawronski et al., 2019). While initial development of associative-propositional duality theories proposed that thought processes were exclusively automatic or controlled, contemporary theorists claim that propositional thought processes arise from initially activated, automatic associations, and that this duality of thought does not operate independent of one another (Gawronski et al., 2019).

Associative-Propositional Evaluative Model

The Associative – Propositional Evaluative Model (APE) is a propositional duality theory which postulates that individuals can hold both automatic and controlled thoughts about an object, concurrently (Gawronski et al., 2019; Gawronski & Bodenhausen, 2011). According to Gawronski and Bodenhausen (2011) the APE model postulates that both associative (automatic) processes and propositional (controlled) processes interact with each other. This may occur as the associative process of thought activation triggers mental associations about an object, and propositional processes act as a validation of those associations. For example, a woman reads about the enjoyment and fun of engaging in running as part of an article to encourage joining a 10 kilometer (km) race in the upcoming summer months. Upon reading the affective information

about running 10 kms, she makes associations with the object – in this case running – and agrees that running is a fun thing to do. This is based on available memories of running and enjoyment of it, from her own past experiences. She then propositionally validates, upon reflection, that indeed running and racing has been an enjoyable activity for her in the past and something that she has benefitted from doing. Her propositional validation of the activated association supports her initial association of running a 10 km race with fun and enjoyment. The APE model has been widely used to examine evaluations and evaluation change (e.g., Berry, 2016). Mental evaluations of an object may be formed by a person's learned or past experiences, temporary considerations such as mood or timing, or by thoughtful consideration of a given object (Albarracin & Shavitt, 2018). While evaluations may be object-specific, Gawronski, Brannon and Bodenhausen (2019) argue that they may also be context-specific. In fact, the APE model specifies that associations are activated in part by the context in which an object is encountered (Gawronski et al., 2019). Context may also influence the propositional validation process, superseding automatic associations when attention is focused on the circumstances surrounding the encountered object (Gawronski et al., 2019). Further, recent work examining the APE model postulates that associations are activated through feature-matching such that when an object is encountered, features of the object are linked to previous experiences or representations with the object (Gawronski et al., 2019). These authors contend that feature matching does not need to be identical; encountered objects need only meet a threshold of similarity in order to activate associative links. If we again consider the woman reading about the fun and enjoyment of running 10 kms, we may consider the influence of feature-matching in this situation. By encountering the message promoting a 10 km race in the summer months, she has feature-

matched fun and enjoyment with being outdoors. She may then find that as she reflects on the activity through propositional validation, she endorses the activity.

When both associative and propositional processes are in agreement about an object, cognitive comfort ensues. For example, an individual may have enjoyed many summers riding her bike with friends, and as an adult, when she sees a bike, she associates it with fond childhood memories. For this cyclist, seeing a promotional poster for biking to work creates favourable feelings toward the bike-to-work initiative. However, when an object does not match a prior experience, the context-specific information cannot be propositionally validated. This creates discordance between associative links and propositional validation and contributes to cognitive discomfort wherein automatic associations about an object do not match the thoughtful reflection about the context-specific object. This may occur when new or conflicting evidence such as diverging information challenges a previously held evaluation. A distinguishing feature of the APE model is that automatic associations may be activated by memories, irrespective of the truth or falsity of the newly presented information, whereas propositional validation is largely concerned with information cogency (Gawronski et al., 2019; Gawronski & Bodenhausen, 2011). For the cyclist holding favourable evaluations towards the bike-to-work initiative, reading the dangers of urban cycling may create discord between propositional validation of the new information (that cycling is dangerous) and her previously held association of cycling as a fun activity. After considering the relevant facts and logical arguments presented, the cyclist will either reject the new information about the dangers of cycling, or will search for other information such as secondary features or the context of the message. Given an opportunity to elaborate on (i.e., think about) the cause for this discord, logical reasoning may help to account for the variance between associational and propositional evaluations, in an attempt to reconcile

the discord (Gawronski et al., 2019). In this way, context is an important consideration during the propositional validation process, and an important aspect of the APE model. For these reasons, the APE model is a good fit for evaluating the influence of exercise blogs on reader evaluations, intentions, and perceptions of believability. The use of a popular form of media such as exercise blogs, may activate associative processes among blog readers while validation of the presented information may be processed by reasoning and contextual cues through propositional processes.

Previous research has shown that evaluations towards exercise are often found to be favourable (Conner et al., 2011) yet, within the context of certain media sources, this may not always be the case. For example, a study examining the effects of watching The Biggest Loser television show found that for participants viewing the exercise program, lower affective evaluations were self-reported as compared with participants viewing a non-exercise television show (Berry et al., 2013). However, it may be unsurprising that individuals watching an intense exercise television show whereby contestants are constantly being yelled at and pushed to physical exhaustion or worse, did not report favourable evaluations towards exercise. Study researchers suggest that the negative depictions of exercise may have contributed to the findings of low affective exercise evaluations. Participants in the study reported positive implicitly measured exercise-related evaluations overall, despite reporting negative explicitly measured affective gut reactions. According to the APE model, when associations do not match propositional validation, this expectancy-violation results in reassessing the information or seeking a new propositional validation (Gawronski et al., 2019). In the Berry et al. study (2013), participants completed a thought-listing task in which comments indicated that for some, depictions of contestants living with obesity were not relevant to the undergraduate sample

within the study. That is, for study participants watching The Biggest Loser, a show focused on participants living with obesity is not representative of most students participating in the research study. In this case, the negative gut response may have been rejected by participants who automatically endorsed exercise as positive. Alternatively, a new proposition may have been formed given the information presented in the television clip, and study participants reasoned that if they themselves are not obese nor unfamiliar with exercise, then it is enjoyable, thus creating accord between associative links and propositional validations. Given these results and the contextual cues that may influence participant responses, it is valuable to understand various types of exercise media and their effect on exercise-related affective evaluations and intentions. Content presented on exercise blogs may produce an affective gut response that is inconsistent with propositional validation however, as there is currently no known research evaluating the effects of exercise blogs on related evaluations and intentions, the APE model and its attention to object evaluation as well as context is a useful theory in the evaluation of exercise blogs on reader evaluations and intentions.

Measurement Tools of Associative-Propositional Duality Models

In order to assess and evaluate both associative links and propositional thoughts, propositional duality models include dual methods of measurement. Propositional thoughts are assessed through the use of explicitly measured, self-report tools such as questionnaires (Sheeran et al., 2013) while implicitly measured automatic associations are measured indirectly through performance tasks (Conroy & Berry, 2017). These tasks have been used consistently in physical activity research (Berry et al., 2011; Berry & Shields, 2014; Calitri et al., 2009; Conroy et al., 2010). Implicit tasks including the Implicit Association Task (IAT), the Evaluative Priming Task, and the Go/No-Go Association Task (GNAT), to name a few, use response latency

(milliseconds) or sensitivity (i.e., correct/incorrect response) to assess the strength of the implicit association (Albarracín et al., 2020; Gawronski, 2009). In short, for each task, participants are presented with a word or image (target), along with categorization of the target with an attribute (evaluation; Gawronski, 2009). Faster response times, or greater sensitivity due to lower errors, suggest stronger automatic associations (Gawronski, 2009; Nosek & Banaji, 2001). Different measurement tasks may be selected based on the dependent variable of interest, and the specific research question being asked (Gawronski, 2009). For example, the GNAT is considered a context-driven task, and attempts to remove comparisons with other categories (Nosek & Banaji, 2001). The GNAT is sensitive to context, and focuses on associations between a single target and its association to an evaluative attribute (Nosek & Banaji, 2001). As such, it is a useful tool to use when measuring automatic beliefs, by using evaluative attributes of opposing valence, to assess association strength of an automatic belief (Nosek & Banaji, 2001).

Qualitative Description

Qualitative inquiry is often concerned with inductive approaches to examining naturally occurring phenomena through interpretive inquiry (Mayan, 2016). This approach to research inquiry allows for an exploration of the meanings that individuals ascribe to the phenomenon under study (Creswell, 2013). This naturalistic approach allows researchers the opportunity to interact with individuals who may be influenced by the phenomenon and its context, and to explore the influence of unique experiences on individuals (Creswell, 2013). Making use of a qualitative approach to examining participant views, experiences, and perceptions of exercise blogs allows for a rich, in-depth exploration of why and to what extent these blogs may be believed by readers. The inclusion of a qualitative design to address the phenomenon of exercise

blog believability provides a more comprehensive exploration of the unique features and content of an exercise blog that may be influential for emerging adult women.

Qualitative description offers researchers an opportunity to study a largely unexplored phenomenon (Sandelowski, 2000). As defined by Sandelowski (2000), qualitative description is a research method that does not require a high amount of data interpretation or abstraction. This allows the researcher to describe the phenomenon in everyday language, present the facts as reported by study participants, and ultimately offer a complete description of the phenomenon in a manner that is data-near (Sandelowski, 2000, 2010). Previous experimental work though sparse, has examined perceptions of believability related to exercise media (Berry et al., 2011, 2018). However, it remains unclear as to which aspects of an exercise-promoting message are believed, and what may have contributed to such beliefs. Given that believability is a user perception, it is of value to understand not only whether exercise-focused social media are perceived as believable, but also to uncover the phenomenon of the unique lived experiences of social media users, viewing this online exercise content. Previous work has explored the lived experience of young adults using health-based social media (Vaterlaus et al., 2015). Findings suggest that young adults consider social media to be both a motivator and a barrier to exercise, and that for some young adults the same aspects of a social media post which may function as a barrier to some, may be motivating to others (Vaterlaus et al., 2015). Further, findings revealed the shared phenomenological experiences of young adults, contextualizing their use of exercise-related social media and its contribution to exercise intentions (Vaterlaus et al., 2015).

Uncovering participant responses to the experience of reading an exercise blog message may provide insight into how an individual responds to this type of information. Interviewing multiple participants produces data that are not static but experiential, and responsive to the

event of reading the blog message. The use of a qualitative description design provides an exploration of the data without a high degree of abstraction, allowing for what Sandelowski has termed a “factist perspective” (Sandelowski, 2010). This approach to inquiry allows for presentation of the facts with minimal inference on the part of the researcher (Sandelowski, 2010). Ultimately this approach may provide some insight and explanation into the popularity, usage, and perceptions of believability of exercise blog messages. This may assist exercise promoters in understanding how the abundance of exercise information available online might influence certain readers.

Chapter 3

Study 1: Who Do They Think They Are? A Quantitative Content Analysis of Exercise Bloggers and Their Blogs

Social media is a popular method of communication, providing access to information, entertainment, and social connection (Kaye & Johnson, 2011). As many as 3.8 billion people worldwide are active social media users (Statista, 2019). One social media platform, blogs, are popular, self-published websites consisting of user-generated media incorporating peer-to-peer networking and two-way communication between the author and audience (Neubaum & Krämer, 2014). Blogs often act as primary sources of information for other social media such as Facebook and Instagram, which are frequently used to promote content that drives consumers to blogs for more information (Crestodina, 2018). It is estimated that approximately 500 million blogs currently exist (Galov, 2019). An online survey revealed that women find blogs influential when searching for information about health, fitness, food, fashion, and parenting (Statista, 2017). Yet the bulk of the current literature exploring social media has focused on social networking (i.e., Facebook), microblogging (i.e., Twitter), and image sharing platforms (i.e., Instagram), largely leaving out blogs as a communication source (c.f., Deighton-Smith & Bell, 2017; Tiggemann & Zaccardo, 2018). Given the potential reach and influence of blogs, examining the content found within may help to inform social media research as a whole.

Cognitive shortcuts known as heuristics may play a role in how information is consumed in particular, in the online environment (Metzger et al., 2010). Research examining perceptions of credibility suggest that heuristic cues may be an effective way for consumers to manage the vast amounts of information found online (Metzger et al., 2010). Yet it may also be increasingly difficult for consumers to authenticate the content or source of information found online

(Metzger et al., 2010). Previous work suggests that presentation such as layout, popularity, and visual appeal may all play significant roles in user perceptions of website credibility (Metzger & Flanagin, 2013; Metzger et al., 2010). Additionally, access to user-friendly software has made it simple for individuals to incorporate many functions into their blogs, known to contribute to user perceptions of credibility and trustworthiness (Appelman & Sundar, 2016; Dochterman & Stamp, 2010). This includes multiple formats combined within an article such as text, embedded video and audio (multimediality), buttons for sharing content via other social media channels and hyperlinks to other websites (hypertextuality), and two-way communication between readers and authors via comments section (interactivity; Chung et al., 2012). By incorporating these features, bloggers can create highly functional websites that may leave consumers unable to discern reliable sources of information. In this way, blogs may masquerade as professional, reliable sources of information despite the lack of fact-checking, evidence, or professional credentialing to support the content portrayed by authors of such sites.

Blogs and social media in general have become popular conduits of health information ranging from disease management to fitness and nutrition information (Boepple et al., 2016; Neubaum & Krämer, 2014). Blog users often consider blog content a reliable, credible information source without consideration for the blog author's educational background (Neubaum & Krämer, 2014). Yet in the online environment it is possible for any person to claim expertise, which can be a significant cause for misinformation (Thon & Jucks, 2017). Many fitness and exercise blog owners and authors known as 'bloggers' are considered–by themselves or by others–to be purveyors of health and exercise information (e.g., Concannon, 2016), despite potentially lacking education or certification credentials in a health or exercise field (e.g., Carey & Hicks-Rocha, 2017). The unregulated nature of the exercise industry may also contribute to

confusion about qualification standards for exercise professionals, which can range from weekend courses (e.g., Can Fit Pro, 2019) to degrees and certifications in the exercise sciences, each with a unique scope of practice (e.g., Canadian Society for Exercise Physiology, 2019). Despite these factors, exercise information seekers overwhelmingly prefer online sources to learn about exercise (Marton, 2015; Vaterlaus et al., 2015).

Research has shown that the online portrayal of exercise may have an effect on exercise thoughts and motivations (Johnston & Davis, 2019; Raggatt et al., 2018). For some, fitspiration social media (i.e., "fitspo") provides exercise inspiration for health improvement (Raggatt et al., 2018). However, health and appearance are often conflated so that the pursuit of health becomes synonymous with achieving an appearance ideal (Raggatt et al., 2018). Yet, "fitspo" websites overwhelmingly endorse exercise for appearance purposes while healthy living blogs commonly featured excessive exercise and idealized body physique (Boepple et al., 2016; Boepple & Thompson, 2014). Among physically active social media users, increased time spent using social media has contributed to decreased exercise self-efficacy and decreased motivation to exercise (Johnston & Davis, 2019). Similarly, accessing social media with a focus on body image, or providing inaccurate information about exercise, functioned as a barrier to exercise uptake among readers (Vaterlaus et al., 2015). While it is possible that individuals consuming exercise media are inspired to uptake exercise, exposure to social media with a narrow focus on specific appearance ideals may also contribute to disordered behaviours (e.g., disordered eating, exercise addiction), or body image disorders (Raggatt et al., 2018; Tiggemann & Zaccardo, 2015).

Despite recent publications examining the content of various types of blogs (e.g., Boepple et al., 2016; Neubaum & Krämer, 2014), there is no known analysis of exercise blogs specifically. Given that blogs often act as primary sources of information for other social media,

with blog content shared on multiple social media platforms simultaneously, examining exercise blog authorship and content may contribute to a better understanding of exercise content found on both the blogosphere and other social media platforms. Therefore, the current study addresses the following research questions:

(i) how do exercise bloggers represent themselves on their blogs?

(ii) how do exercise bloggers use their platform to share and portray exercise information?

Methods

In order to address the research questions, a systematic, quantitative content analysis was completed. Quantitative content analyses are often used to describe patterns, characteristics, and relationships within content (Riffe et al., 2005). Both the "About Me" as well as main page content of popular exercise blogs were examined.

Sample

To obtain a sample of exercise blogs, two researchers individually entered the terms "fitness blog" and "exercise blog" into the Google search engine during one day in May, 2017, similar to Boepple et al. (2016). Both "fitness" and "exercise" were used because these terms are often used interchangeably in the field of exercise, despite different definitions. Initial search returns yielded individual websites, as well as websites featuring lists of promoted or popular fitness and exercise blogs (e.g., Best Fitness Blogs to Follow in 2017). Given these lists were returned in the initial search results, all blogs named by these featured lists were included as part of the initial search return. The first three pages of search engine results are often the most widely read and influential (Hindman et al., 2003). Therefore, in line with previous research examining popular blogs (Boepple et al., 2016), only the first three pages of search results were

catalogued for each search term. Additionally, the following inclusion criteria were applied to the initial sample: (a) fitness/exercise –based (b) content-based, not a mobile application such as a daily fitness tracker (i.e. an "app") or activity log, (c) text-based, as opposed to video-based, (d) full blog (i.e., not a microblog or social network), (e) written in English, and (f) activity of blog posting by author(s) was current within two weeks of data collection. The final sample consisted of 194 blogs.

Data Collection

"About Me" Pages

Two researchers captured screen shots using Fireshot software, a Google Chrome extension package that allows for full capture of webpages including images, margins, and site visitor comments sections. This software was used to record "About Me" pages from 165 blogs that had these pages. Where no "About Me" or similar pages could be found, site characteristics (e.g., social media account links) were recorded. Screen captures were coded using a coding guide based on the current research questions and previous research (Allen, 2014; Boepple et al., 2016; Boepple & Thompson, 2014). The code guide is included as a supplemental file.

Posts

"Main page" content was also captured using the Fireshot software. Similar to methods in previous blog research (Boepple & Thompson, 2014), a constructed week was used. Each blog was captured seven times, on a different weekday, over the course of four weeks in May/June, 2017. The most recently posted article was used for each day's new set of screenshots unless no new content had been posted between screenshot captures. This resulted in 722 screen shots captured from the 194 blogs. Again, screen captures were coded based on previous research coding criteria, and can also be found in the code guide (Appendix A).

Data Analysis

"About Me" Pages

Data were coded categorically, and numeric values were assigned for each code. The principal investigator coded all 165 "About Me" pages. Up to four codes could be assigned to describe the overall focus of the blog as stated by the blog author. Codes were not assigned in order of prevalence. Code descriptions and examples are presented in Table 3.1. To ensure reliability of the data codes, a second researcher independently coded 33% of the "About Me" pages. Inter-rater testing was then performed; Cohen's Kappas ranged from 0.56 to 0.88. The majority of discrepant codes were due to one coder ascribing an additional code where the other did not. All discrepancies were resolved between the raters through discussion.

Posts

The principal investigator categorically coded the 722 content pages, herein known as "posts". A maximum of four codes were assigned to describe the overall focus of each article, with a second level of codes for key concepts identified in each post. Post focus and key concepts were not coded in order of prevalence; descriptions and examples can be found in the Table 3.2. Following the inter-rater testing procedure outlined for the "About Me" pages, Cohen's Kappas for the posts ranged from 0.41 to 0.81. Once again, a majority of discrepant codes were due to one coder assigning an additional code where the other did not. All discrepancies were resolved through discussion.

Analysis

Frequency and cross-tabs analysis were used to examine site features, blog authorship, and blog post characteristics. Blog authorship was coded to identify bloggers with listed education in a health/exercise field (diploma/degree/advanced degree) and those without any

reported education; chi-square analysis was used to examine heuristic and post features based on blog authorship.

Results

Authorship and Post Characteristics

Blog authors were primarily female, with 96 blogs (49.5%) owned by women, though 23 blogs (11.6%) were considered corporate (i.e., owned by businesses, e.g., LifeFitness Blog, Reebok Blog). Chi-square analysis showed that bloggers without any formal education in an exercise field were significantly more likely to identify as an exercise professional, $x^2(9) = 77.96$, $p < .001$. Frequency analysis revealed that only 11 authors (6.7%) reported having a degree or advanced degree in an exercise field (e.g., kinesiology). Those without any education in the exercise sciences were significantly more likely to share advice-based posts $x^2(18) = 38.82$, $p = .003$, with 225 (31.2%) advice-based articles written by bloggers without any education in exercise. Of total posts, 120 (16.4%) were written by bloggers with formal education in health/exercise (degree, diploma) while 471 (65.2%) were written by bloggers with no listed education in health/exercise. Bloggers with formal education were significantly less likely to share a personal history of unhealthy lifestyle, $x^2(12) = 240.92$, $p < .001$, and were also significantly less likely to report a story of personal transformation (e.g., lifestyle change, exercise uptake), $x^2(9) = 131.77$, $p < .001$. Blog author demographics are reported in Table 3.3.

Shareable Platforms, Hypertextuality, Interactivity, and Multimediality

Nearly all blogs linked to at least one social media platform, with the most frequent being Facebook, shared on 90.7% of the blogs (see Figure 1). With regard to interactivity, 148 (76.3%) blogs had a comments section for readers to post to the blog, which was significantly more prevalent among blogs authored by those without any formal exercise education $x^2(6) = 13.87$, p

= .03. Hypertextuality was present with blog posts including links to other posts within the blog on 334 (46.3%) of the content pages. Linkouts to other blogs or websites were included in 397 (55.0%) of the posts, and were more prevalent among those with formal education $x^2(6) = 10.00$, $p = .02$. Images were included in 649 (89.9%) posts while 104 (14.4%) posts included embedded video, and this was not significant between bloggers with and without reported education. A list of interconnectivity features is presented in Table 3.3.

Blog Post Focus

All 722 posts were assigned a primary focus and in 133 posts, a second focus was also identified. Overall, 314 (43.5%) blog posts presented exercise as a focus, while 151 (20.9%) included nutrition/food content. 'Other' key concepts not included in the coding guide accounted for 192 (26.6%) posts, followed by 160 (22.2%) for nutrition/recipes, and 130 (18.0%) for fitness in general. All codes and frequencies are found in Table 3.2.

Exercise-Based Blog Posts

Crosstabs analysis showed that of the 314 exercise-focused posts, 125 (39.8%) were about exercise in general, 88 (28.0%) were about muscle/resistance training, 61 (19.4%) were centered on cardiovascular exercise (see Figure 2). Crosstabs analysis showed that among exercise posts, 137 (43.6%) were articles, 77 (24.5%) were presented as personal stories, and 60 (19.2%) were presented as prescriptive exercise. Posts that involved exercise prescription (i.e., an exercise program) were most commonly written by bloggers without formal education and were almost exclusively for muscle/resistance training purposes (31 posts; 46.9%) or for general exercise (27 posts; 49.0%). There were 172 (23.8%) appearance-focused posts, including key concepts about weight or fat loss, muscle/resistance training for appearance purposes such as

"toning" or "building muscle". Of the appearance-focused posts, 128 (73.8%) were written by bloggers with no formal education in exercise.

Discussion

Research suggests that most social media users prefer to learn about exercise online by exercise professionals, and that authors with relevant qualifications are considered trustworthy, reliable sources. Information validity and reliability are user judgements made by consumers, often via heuristic cues such as expertise (Sundar, 2008; Thon & Jucks, 2017). Nearly half of all authors claimed to be exercise professionals yet many presented ambiguous qualifications such as "I am a personal trainer, fitness instructor and lifestyle coach" (Pellegrino, 2017), without providing any further specific details. Previous research suggests that this may be an attempt to improve perceptions of credibility among readers by using the 'authority heuristic' (Sundar, 2008). Generalized statements about occupation may activate this heuristic cue, imparting a sense that the author is an expert in this area. Further, bloggers lacking education were also more likely to share personal stories of unhealthy lifestyle and transformation to healthy living such as becoming 'fit'. This may be one way for unqualified exercise bloggers to establish experiential expertise again, in an attempt to improve perceptions of credibility among readers (Metzger & Flanagin, 2015). Previous studies have also shown that personal fitness trainers lacking formal education are less likely to use evidence-based information when informing clients about exercise (Stacey et al., 2010). This is of concern given the current study found that exercise bloggers without education were also more likely to share posts in the form of advice-based articles. In these cases, such individuals may distribute misinformation to the audiences with whom they interact.

Consistent with previous studies, nearly all blogs included a component of multimediality with images used most commonly (Boepple & Thompson, 2014; Crestodina, 2018). Blogs were also heavily linked to other social media platforms, websites, and to other pages within the same blog. This hypertextuality suggests that bloggers use other social media platforms to reach larger audiences making it easy to share and promote blog posts. This is consistent with blogging analytics reporting heavy use of social media platforms to drive readers to blog posts and suggests that they may well act as a primary source of information for other social media platforms (Crestodina, 2018). Sharing content via other social media platforms may also be regarded as an interactivity feature providing opportunity for potential and current audiences to interact with each other and the blogger (Chung et al., 2012). Bloggers who did not cite any exercise education were more likely to incorporate various interactivity features than those who did cite formal education in the exercise sciences. Interactivity, multimediality, and hypertextuality are commonly used heuristic cues that may contribute to reader perceptions of credibility (Chung et al., 2012). Those lacking education may be attempting to influence perceptions of credibility through the use of these heuristic cues. However, multimediality did not differ based on author education suggesting that bloggers are generally aware of the popularity of image and video-based platforms for online content dissemination (We Are Social et al., 2020).

In contrast to research about "fitspiration" websites (Boepple et al., 2016), the current study found that the majority of blog posts did not focus on appearance ideals. This is good news for readers who may be interested in achieving strength or general fitness goals rather than appearance ideals, and suggests that some blog authors may be more concerned with intrinsic outcomes than appearance. Previous work indicates that exercise social media may represent a

"healthy ideal" for audiences, contributing to exercise-based goal setting, and providing motivation to improve strength and fitness for health benefits (Raggatt et al., 2018). However, advice about achieving appearance ideals was still included in 172 blog posts such as the one titled, "8 Fitness Tips for a Killer Summer Body" (Gym Flow 100, 2017). This is similar to traditional media headlines, which focus on sensationalized, body-objectifying statements (Bazzini et al., 2015). In this way, bloggers confound exercise advice with appearance ideals, which may contribute to misinformation about exercise-related outcomes. From a practical view this may be detrimental as exercise promoting messages that "overpromise" results may decrease exercise self-efficacy and contribute to dropout (Dimmock et al., 2020). Further, while the majority of blog posts were centered on exercise, other posts were focused on other topics such as nutrition. This is concerning given that nutrition and exercise qualifications are often mutually exclusive though the public may be unaware of this factor. Exercise professionals such as personal fitness trainers may conflate their responsibilities, assuming roles beyond the exercise scope of practice such as that of nutritionist despite a lack of training in the latter discipline (De Lyon et al., 2017). This may contribute to confusion by the public who are unable to discern various areas of expertise and education, and are more likely to trust those that "look the part" when seeking exercise information (De Lyon et al., 2017).

This study provides new insights into the content found within exercise blogs, includes a large sample size, a broad scope of content, and the inclusion of both authorship and content pages. However, there are some limitations. Like all social media, blogs are rapidly changing and updating content, site features, and authors. This makes replicability difficult as some blogs analyzed here are no longer maintained, others have already changed key components such as blog name, focus, or content, and new ones have been created. Additionally, an analysis of

imagery was not included in the current study. Images may be powerful conduits of information for consumers, and future work should focus on how bloggers present themselves and their content via imagery. Lastly, given the interconnectedness of social media, future research may wish to examine how blog content is used to drive content on other social media platforms, and whether this contributes to exercise uptake and adherence.

Overall, blog authorship remains largely ambiguous making content veracity questionable. The use of heuristic cues to improve reader perceptions of credibility may contribute to a more polluted online environment, increasing the potential for misinformation to circulate, and limiting the reach of qualified exercise professionals. As primary sources of information for other social media platforms, a closer examination of exercise blog content may contribute to a greater understanding of exercise social media as a whole.

Table 3.1. "About Me" Pages Codes, Frequencies and Examples

Code	Description	Frequency*	Example
Health/wellness	Healthy lifestyle/living, self-care, wellness, mental health	66	"I believe that healthy is about more than just being physically fit…it's about being happy in your relationships. It's about feeling fulfilled at your job." (Kayla, 2017)
Exercise	Exercise, fitness, physical activity, workouts	165	"Simply put…I love fitness and love to share…so let's share the love!" (Price, 2016)
Corporate	Gyms, equipment, supplements, governing bodies (i.e. NASM)	29	"Whether your aim is to lose weight, tone up, build bulk or gain weight we can put together a yoga, gym or other fitness programs for you and also recommend the right personal trainer to help you achieve your goals." (Wellintra, 2017)
Food/nutrition	Food/nutrition advice, recipes, food substitutes, supplements	49	"I take food infatuation to a whole new level. …Here's the thing, pairing paleo and CrossFit together has completely changed my life." (Juli, 2015)
Other	Includes 'faith', 'spirituality', 'beauty', 'travel'	17	"On this website and blog you will find lots on [sic] information to help you learn about holistic health & beauty including training, nutrition, skin care and makeup tips." (Garcia, 2017)

*Each blog may have held multiple codes

Table 3.2. Post Codes, Frequencies, and Examples

Code	Description	Frequency*	Example
Post Focus			
Appearance	Focus is about thinness, fat loss, muscle work (size, tone, etc.) for appearance purposes	74	"Wedding season is nearly upon us and if you're getting hitched this year, there's still plenty of time to get your dream body to go along with your dress." (DW Fitness, 2017)
Exercise	Focus is on fitness or exercise, outdoor activities and recreation, physical activity	314	"You can start with three cardio sessions per week, aiming to maintain your target heart rate for 30 full minutes" (Youniverse, 2017)
Wellbeing	Alternative medicine, meditation, chiropractic, mental health, motivation	82	"Learn how to motivate yourself to get started on something new, and talk yourself through challenges across your entire life, to build your mental toughness!" (Sippel, 2017)
Health	Focus is on improvement of health, disease prevention	57	"Lack of sleep can lead to many serious ailments like increased risk of type 2 diabetes and higher risk for depression." (World Health, 2017)
Non-health	Fashion, beauty, family, hobbies, sales (not product review), workout gear	176	"There's various factors that are causing a threat to bee's [sic] across the world at the moment such as loss of habitat, disease and the use of pesticides but there's some things we can do to help." (Murphy, 2017)
Nutrition/Food	Includes food focused posts, dieting, supplements	151	"The goal is to get some healthy fats and proteins in your system that will eliminate the urge to grab chips, candy bars and other not so pleasant snacks." (Dunlop, 2017)
Key Concepts			
Weight/Fat Loss	Ties content into weight and fat loss	64	"Most people say they want to 'lose weight' but…what they actually really mean is that they want to 'lose fat'. (Morocco, 2017)

Performance Training	Increasing athleticism, training for athletic performance	37	"Here are some race rituals around this period that can give you an edge." (Grunwell, 2017)
Muscle/Resistance Training	Resistance training, muscle definition ('toning'), increasing strength, hypertrophy, endurance of muscle	108	"While there is merit to working within the 6- to 12-rep range…it's not necessarily the end-all when it comes to muscle gains and could involve some variability." (Sinkler, 2107)
Cardiovascular Training	Endurance/run training, running logs, race training; not race recaps	63	"Whether it's outdoors or on the treadmill, follow this schedule and you could be running miles before you know it!" (Sieker, 2017)
Fitness in General	General fitness/exercise; non-descript, total body	130	"There are really only two ways of getting in shape….you can follow the principles I am about to so graciously trot out for you." (Flynn, 2017)
Health in General	Improvement of health, decrease risk for health problems, injury prevention or rehabilitation, disease management	69	"The reality is that, except for truly genetically inherited diseases such as Huntington's disease, the worst you can do is to inherit the genes for increased risk." (Ross, 2017)
Race/Event Recap	Description of: running, triathlon, cycling, adventure race by the author	15	"The race itself was very well marked for the most part. Some of the roads were paved, some were not." (Carmy, 2017)
Nutrition/Recipe	Nutrition, recipe, food, supplements	160	"There's no point in eating a healthy diet if food is not being absorbed…I recommend a digestive enzyme supplement." (Ruper, 2017)
Wellbeing	Meditation, stress management, resilience, emotional health, mental health, body positivity, motivation	81	"There's no question our life feels more exciting, and we get more done, when we feel inspired." (Beares, 2017)
Beauty/Fashion	Fashion, cosmetics, skincare, haircare	40	"If you want to improve the look of your skin then happily, there are products and procedures that do assist." (Cross, 2017)

Family	Wedding, birth of a baby, family life	29	"We didn't find out the sex of this baby, like we did with C and were surprised that we had another girl!" (Chicrunner, 2017)
Other	Items that do not fit in any category	192	"Tattooing is a timeless art. It' the most permanent form of storytelling that people commit to, leaving a mark on their body forever." (Rines, 2017)

*Each blog may have held multiple codes

Table 3.3. Blog Owner and Post Demographics by Education

	Total		Education							
			Degree/Diploma in health/exercise		Degree in other areas		Certification Only		No education listed	
	N	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Blog Owner Demographics*										
Male	25	12. 9	7	3.6	0	0.0	1	0.5	18	9.3
Female	96	49.5	19	10.0	10	5.2	12	6.2	55	28.4
Corporate Author	23	11. 6	0	0.0	0	0.0	0	0.0	23	11.9
Unknown/Multiple Authors	17	8.8	6	3.1	3	1.6	0	0.0	43	22.2
Self-Identifies as Exercise Professional	94	57	20	10.3	7	3.6	13	6.7	65	33.5
Story of Personal Transformation Included	76	46.1	69	35.6	41	21.1	30	15.5	129	66.5
Exercise certifications clearly stated by author	27	16.4	-	-	-	-	-	-	-	-
Post Authorship**										
Blog Owner	518	71.8	30	4.5	13	1.8	13	1.8	137	70.6
Guest Author	115	15.9	18	2.5	7	1.0	5	0.7	85	11.8
Unknown	89	12.3	-	-	-	-	-	-	-	-
Post Presentation**										
Article	319	44.2	44	6.1	23	3.2	15	2.1	225	31.2
Story	191	26.5	31	4.3	19	2.6	16	2.2	112	15.5
Prescriptive	66	9.1	8	1.1	4	0.6	0	0.0	54	7.5
Recipe	45	6.2	14	1.9	4	0.6	4	0.6	21	2.9

Recap (race/event)	10	1.4	4	0.6	0	0	2	0.3	2	0.3
Product/Review	56	7.8	12	1.7	5	0.7	2	0.3	37	5.1
Other (embedded vlog, linkouts, race sign up application)	35	4.8	7	1.0	2	0.3	2	0.3	20	2.8
Post Interconnectivity**										
Images Included in Post	649	89.9	107	14.8	56	7.8	37	5.1	421	58.3
Video Embedded Within Post	104	14.4	23	3.2	7	1.0	3	0.4	66	9.1
Links to other posts on the blog	334	46.3	54	7.5	41	5.7	18	2.5	209	29.0
Links to other blogs/websites	397	55.0	79	10.9	36	5.0	19	2.6	248	34.3

*For n = 194 blogs

**For n = 722 blog posts

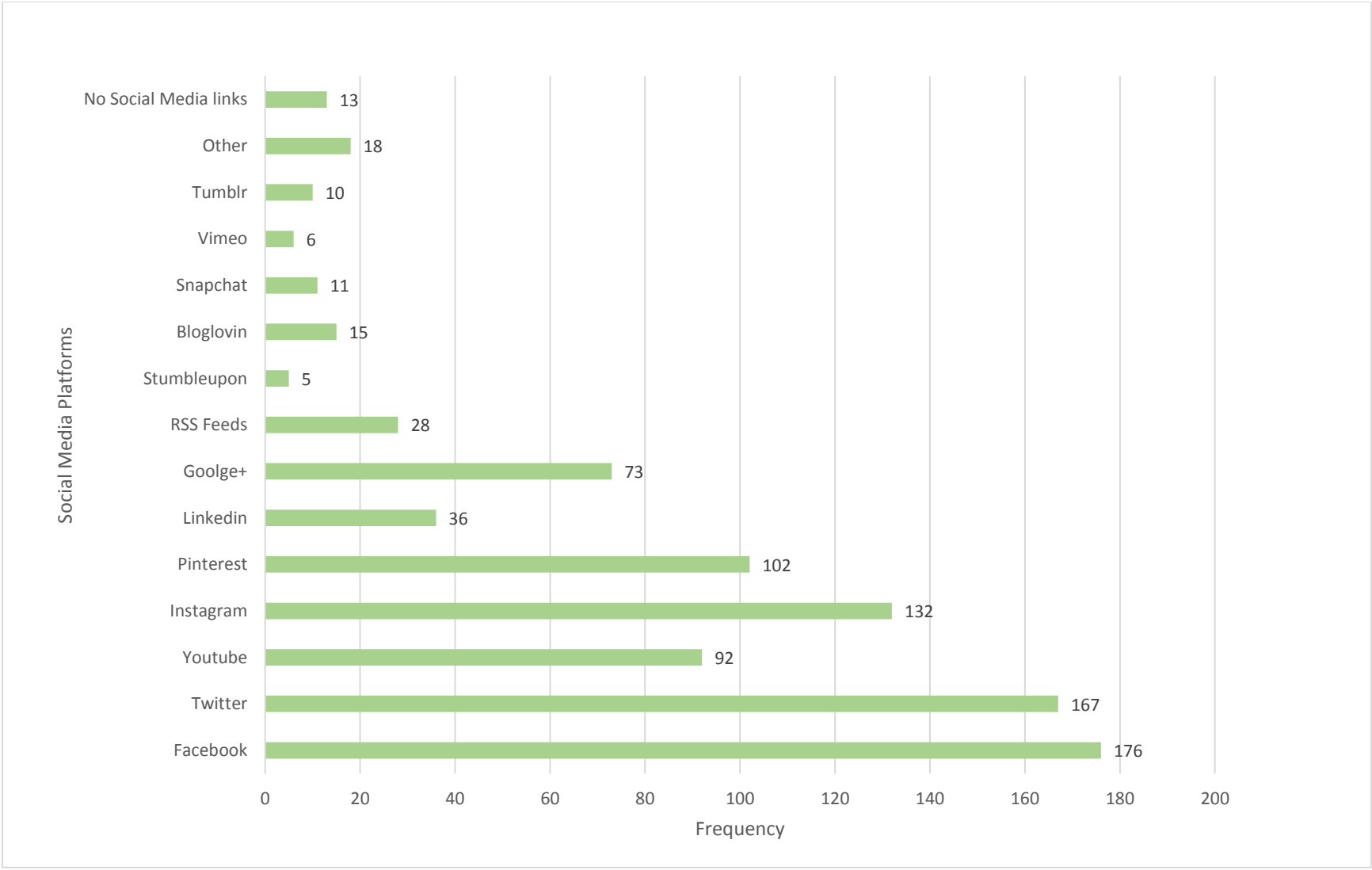


Figure 3.1. Frequency of Blog Links to Author's Other Social Media Platforms

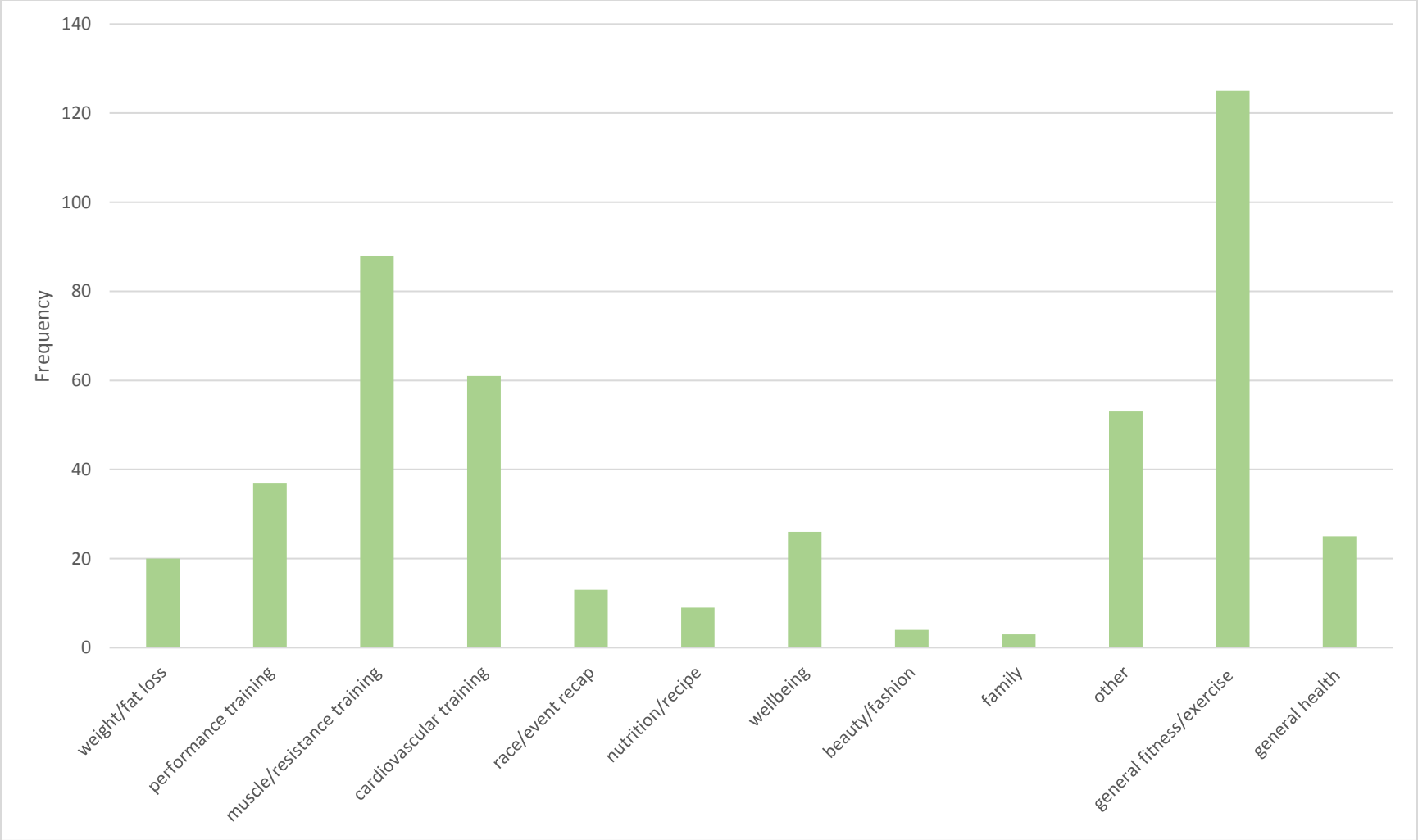


Figure 3.2. Exercise-Focused Post Key Concepts

Chapter 4. Study 2: The Believability of Exercise Blogs Among Young Adults

This study is in press: Ori, E. M., Berry, T. R., & Yun, L. (in press). The Believability of Exercise Blogs Among Young Adults. *Journal of Sport and Exercise Psychology.* Accepted August 15, 2020.

Introduction

Due to their potentially lifelong familiarity with digital media, many young adults aged ~18-30 years are highly experienced with the internet as a source of information, and spend more time using the internet than any other age group (SEMRush, 2019; Percheski & Hargittai, 2011; Vaterlaus, Patten, Roche, & Young, 2015). Previous work has also shown that health-related information such as exercise and fitness is most often obtained through online sources, in particular amongst young adults (Ori & Berry, 2020; Kwan, Arbour-Nicitopoulos, Lowe, Taman, & Faulkner, 2010). Females are also more likely to seek health information online than males (Percheski & Hargittai, 2011; Atkinson, Saperstein & Pleis, 2009). Because lifelong exercise behaviors may be established at this time in life (Sparling & Snow, 2002) it is important to understand how online exercise information may be perceived and understood. However, there are no known studies examining the believability of exercise websites nor whether exercise websites have an impact on exercise-related thoughts and intentions. Therefore, the purpose of this research was to examine how young adult women perceive the believability of an exercise blog message. A secondary purpose was to determine whether believing an exercise blog message predicted exercise-related intentions.

Peer-to-peer, user-generated networks termed ‘social media’, are not subject to information verification (Metzger & Flanagin, 2013; Neubaum & Krämer, 2014). This leaves the

burden of proof with the information consumer to discern validity, reliability, and truthfulness of online content (Flanagin & Metzger, 2007; Han, 2018). Popular self-published websites known as blogs, are one such form of social media often used as interactive platforms for blog owners and readers to communicate (Neubaum & Krämer, 2014). Users of blogs often consider them more credible than traditional media or other websites; yet, given the unregulated nature of social media, blogs may contribute to misinformation, and uninformed promotion of health advice (Kaye & Johnson, 2011). Further, when compared with institutional public health websites, health blogs garnered more attention and content recall (Neubaum & Krämer, 2014). Given the unregulated and often times unsubstantiated claims of online information, there is a potential for such sources of information to have detrimental effects on readers (Jiang & Street, 2017). This may include extreme exercise regimens or inversely, disinterest in participating in exercise activities due to lowered perceptions of ability. Knowing how users perceive online exercise-related information and if perceptions influence exercise intentions, may facilitate understanding of how these media influence health-related behaviors.

Much of the current literature has examined credibility as a singular construct, and most studies have examined credibility as it pertains to a source such as the author or publisher (e.g., Berry & Shields, 2014; Han, 2018; Westerman, Spence, & Van Der Heide, 2014). Other studies examining credibility have focused on the medium such as websites or magazines (Johnson & Kaye, 2015; Kaye & Johnson, 2011). Research examining the perceived credibility of online sources have placed emphasis on website-specific features such as layout, publication timeliness, and web address (Dochterman & Stamp, 2010; Flanagin & Metzger, 2007). Whereas credibility is concerned with trustworthiness of the source (Johnson & Kaye, 2009), believability refers to the content of a message and reader perceptions of truthfulness (O'Cass & Griffin, 2006).

Readers often conflate source, medium, and content so that it is not possible to assess which aspects of a message contribute to perceptions of credibility (Appelman & Sundar, 2016). Researchers have therefore called for a separation of these features placing an emphasis on the need for examination of the message itself, irrespective of the source and medium (Appelman & Sundar, 2016). Given the opportunity for misinformation to circulate, perhaps a step in understanding the impact of an exercise-promoting message is to understand whether the message is–or is not–believed by the reader. While there is limited research on the influence of believability on exercise-related cognitions, one study demonstrated that believing an exercise advertisement predicted exercise-related evaluations when viewing a health-based exercise advertisement, and negatively predicted intentions when viewing an appearance-based exercise advertisement (Berry et al., 2011). This influence of believability on both evaluations and intentions is important, given that both evaluations and intentions have repeatedly been shown to predict exercise behavior (Courneya et al., 2006; Rhodes & Kates, 2015). Further, research examining the predictive validity of affective evaluations suggests that affective evaluations, separate from instrumental evaluations, may be an independent predictor of intention (Courneya et al., 2006). It is possible then, that increased believability of exercise and fitness blog messaging may contribute indirectly to behavioral change, through behavioral antecedents such as evaluations and intentions.

This research included implicitly measured (i.e., automatically activated) and explicitly measured (i.e., self-reported) evaluations because behavior may be mediated by the nature of an individual's evaluation of an object and whether an individual perceives an object to be personally relevant (Gawronski et al., 2019). Implicit-explicit duality models attempt to explain underlying cognitive processes to object evaluation: spontaneously activated links and

propositional validation. One such model, the Associative–Propositional Evaluative (APE) model contends that when features between new and old objects are matched, and a spontaneous association is made. Given the time to reflect, individuals may then propositionally validate their spontaneous association. When the new and old features are unmatched, individuals will focus attention on the context, or on the object or experience's secondary features (Gawronski et al., 2019). Time spent attending to other aspects of the object such as context, may affect propositional validation and has the potential to contradict and supersede original, spontaneous associations (Gawronski et al., 2019).

In order to assess reader believability of blog content on intentions to engage in exercise, an experimental design was used to answer the following research questions: (a) do individuals reading an exercise blog message report higher automatically activated believability after reading the information contained within the message, regardless of whether the information is factual or not? (b) do individuals reading a non-factual exercise blog message explicitly believe the information contained within the message? and (c) does automatically activated believability of the factual exercise blog message predict exercise-related intentions? Given the findings from previous research, it was hypothesized that: (a) individuals reading an exercise blog message, either factual or non-factual, will automatically endorse the message as believable, (b) individuals reading the non-factual exercise blog message will not explicitly endorse the message as believable, and (c) automatically activated believability of the factual exercise blog message will positively predict exercise-related intentions.

Methods

Participants

A total of 153 participants (mean age = 24.31 ± 3.30) were recruited using Prolific, an online research participant pool. All participants were selected using Prolific's user profile recruitment tool which included users that were: 18-29 years of age, resided in Canada, self-reported English language proficiency, and self-identified as women. In line with Prolific's incentive procedures, participants were offered CAD 6.00 upon completion of their participation.

Materials

Using the findings from a content analysis, one blog was selected by the principal investigator, primarily based on: message type (affective), blog authorship (e.g., an individual, not corporate author), and blog layout (attractive, professional), as suggested by previous studies (Jung et al., 2016; Metzger & Flanagin, 2013). Selecting an article which controlled for these heuristic cues allowed participants to attend more closely to the message itself. Additional criteria used to select the blog article included language that was aimed at women, and that the article was not sponsored by a third party (e.g., product review). One blog article was selected as the model for the basis of the study, and included factually incorrect content information, as determined by the principal investigator who is a clinical exercise physiologist. This blog was then manipulated by the principal investigator to create a factually correct version of the content. No other aspects of the blog article (layout, images) were altered. This resulted in two distinct but similar blog messages (a) factually correct message and (b) factually incorrect message. Both blog articles focused on the use of resistance training to improve physique; the original article focused heavily on the avoidance of exclusive cardiovascular exercise for weight loss citing that it may catabolize muscle tissue while the altered article included information about the benefits of combining resistance and cardiovascular exercise. Additionally, the original article focused on restrictive caloric deficits that would simultaneously allow for muscle hypertrophy whereas the

altered article promoted a need for caloric balance and the importance of quality nutrition for muscle tissue health. Lastly, the original article provided specific information suggesting natural muscle decline began at age 20, and that women both have 'no testosterone' and later on, 'one-tenth' the testosterone of men. In contrast, the altered article provided information about age-onset muscle decline which typically begins around age 45 for women, and that women only have one-one hundredth the amount of testosterone as men.

Measures

Demographics

Participants were asked to self-report age, ethnicity, education, annual income, province of residence, and height and weight (used to compute body mass index). The Godin Leisure Time Exercise Questionnaire (GLTEQ) was used to assess self-reported physical activity (Godin, 2011). Participants reported average number of bouts and duration per bout of: mild, moderate, and vigorous physical activity (PA) per day, in the previous week.

Implicitly Measured Believability

Automatic believability was measured using a Go/No-go Association Task (GNAT; Nosek & Banaji, 2001). The target items were exercise-related words (e.g., lean muscle, fat burning, weight training) from the blog message and evaluative attribute items were from the explicit believability scale (e.g., honest, trustworthy; O'Cass & Griffin, 2006). Furniture items were used for the contrast category (e.g., bookcase, table). A fixation cross was shown prior to the start of each trial for 500 milliseconds (ms) and response deadline was set to 800ms, based on previously published studies (Berry, 2016). Participants were instructed to categorize words belonging to the category as quickly as possible by hitting the space bar (go), or to ignore the word (no-go) if it does not belong to one of the target categories. Participants each completed

multiple blocks of the GNAT, where each block consisted of the following word types (a) exercise and believable (b) exercise and not believable (c) furniture and believable (d) furniture and not believable. Block order was counterbalanced so that some participants began with exercise and believable first, while others began with exercise and not believable, etc. Sensitivity (correct/incorrect) scores were recorded and used as the outcome measures. This task has been reliably used in previous research on evaluations (Berry & Shields, 2014; Gawronski, 2009; Nosek & Banaji, 2001).

Implicitly Measured Evaluations

Automatic evaluations were also measured with a GNAT, similar to the believability GNAT with the difference being the evaluative attribute items which were good or bad: pleasant/unpleasant, enjoyable/unenjoyable, pleasurable/painful, similar to methods used by Berry (2016). Participants completed multiple blocks of the GNAT: (a) exercise and good (b) exercise and bad (c) furniture and good (d) furniture and bad. Block order was counterbalanced so that some participants began with exercise and good first, while others began with exercise and bad, etc. Sensitivity (correct/incorrect) scores were used as the outcome measures. This task has been reliably used in previous research examining implicitly measured affective evaluations toward physical activity (Berry, 2016; Berry & Shields, 2014).

Explicit Believability

Self-reported believability was measured on a seven-point bipolar adjective scale. Statements began, “for me, this message is...” Ten items, based on the Social Advertising Believability Scale (Beltramini, 1988) were used and included tails such as: “unbelievable/believable”, “not trustworthy/trustworthy”, “unlikely/likely”. High scores indicated stronger believability. This scale has been used in credibility research, including

health-based research (Berry, Jones, McLeod, & Spence, 2011; O'Cass & Griffin, 2006). Cronbach's alpha for reliability across all 10 items was .93.

Explicit Evaluations

Self-reported affective evaluations were measured on a seven-point bipolar adjective scale. Statements began with "for me, participating in regular exercise is…". Three items were used to reflect affective evaluation: pleasant/unpleasant, enjoyable/unenjoyable, and pleasurable/painful. High scores indicated more positive affect. This reflects previous research and research across undergraduate populations (Bellows-Riecken, Rhodes, & Hoffert, 2012; Berry et al., 2011; Berry, McLeod, Pankratow, & Walker, 2013; Berry & Shields, 2014). Cronbach's alpha for reliability across all three items was .93.

Exercise-Related Intentions

Intentions to exercise were measured using three items posing the question, "I plan to exercise for at least 30 minutes per day over the next month", as conceptualized by Ajzen (2006). A seven-point scale, as proposed by Rhodes & Rebar (2017), using extremely unlikely/extremely likely, strongly disagree/strongly agree, and true/false were used to assess the strength of intention. High scores indicated greater intention to exercise. Cronbach's alpha for reliability across all three items was .90.

Thought Listing Task

Participants were asked to list up to five thoughts that occurred to them upon reading the blog article.

Procedure

Ethical approval was obtained from the university's research ethics board prior to recruitment. Participants entered into the study via Prolific after meeting inclusion criteria,

consenting by overt action, and were then redirected to Millisecond Inquisit (www.millisecond.com) to complete a series of tasks. Participants were randomly assigned to read either the original (non-factual) or altered (factual) blog article, and were asked to read the assigned article at the start of study participation. After reading the blog article, participants completed the thought listing task. They were next presented with the believability and affective exercise evaluation GNATs, explicit believability and explicit affective evaluation surveys, exercise intentions, demographic questionnaire, and GLTEQ. A debriefing was included at the conclusion of the study addressing the factually incorrect information, to ensure participants were aware that the information portrayed was purposefully selected for its incorrect content.

Data management

For demographic variables, two respondents' heights were outliers, and coded as missing with reported heights >370cm. Only 145 participants completed the GLTEQ, four of whom provided string responses (e.g., jogging, swimming, etc.) which were removed because it was not possible to infer a numeric response from these answers. Five responses citing > 60 bouts per day and/or where total minutes of PA exceeded 6,000min/week were considered outliers, and were removed from the dataset. This resulted in nine respondents removed from the GLTEQ analysis, resulting in 136 total responses used for descriptive purposes. Responses for each type of PA were computed by multiplying minutes by bouts, to determine an average weekly amount of PA in minutes; scores for both moderate and vigorous PA were summed and mean scores computed, to determine an overall weekly average in minutes of moderate-vigorous PA per participant. This was used for comparison to PA guidelines which focus on accumulation of moderate-vigorous PA (World Health Organization, 2010).

For Go/No-Go Tasks, 12 cases were removed from the dataset due to incomplete and erroneous data. Error scores suggest participants were not performing the task as instructed therefore only correct scores were used. This is in accordance with analysis recommendations from Nosek and Banaji (2001). This resulted in 141 participants with complete data for hypothesis testing analyses. Sensitivity scores were computed as recommended by Nosek and Banaji (2001), resulting in a *d'* score for each participant, per block (exercise + believe; exercise + disbelieve) which was then used for analysis.

Descriptive statistics were run to describe the sample. To test the first hypothesis, a Repeated Measures Analysis of Variance (RM ANOVA) was computed using *d*' scores for exercise + disbelieve, and *d*' scores for exercise + believe as the within subjects variables and group (original or altered article) as the between subjects variable. To address hypothesis two, a Multivariate Analysis of Variance (MANOVA) was computed. Group was the fixed factor, and explicitly measured evaluations (as an aggregated, mean score for all questions across three items), and intentions (as an aggregated, mean score for all questions across three items) were used as the dependent variables with implicitly and explicitly measured believability (again as an aggregated mean score across ten believability items) as the independent variables. To test hypothesis three, a hierarchical multiple regression with interaction terms was computed, using intentions to exercise as the dependent variable, and group assignment, implicit believability, explicit believability, implicit affective evaluations, explicit affective evaluations, and thought listing task valence scores as the independent variables. Group assignment was dummy coded for the interaction and multiplied by each of the mean centered independent variables.

For the thought listing task, personally relevant thoughts were coded as thoughts that were personal to the participant: situation, body image of the self, and experiences. Positive

statements included thoughts that offered positive commentary about the article such as agreement with the author, or perceptions of interest in the content. Negative statements included thoughts that offered negative commentary about the article such as negative body image, or a lack of scientific evidence in the article. Thoughts listed could be coded as any or all of the codes, so that each thought could have as few as zero or as many as three codes (personal relevance, positive, and negative statement). Frequencies for each code were summed and a valance score was calculated for each individual by subtracting the number of negative statements from positive statements so that a positive score indicated an overall positive commentary, zero neutral, and negative a net negative commentary. Nine participants did not provide any comments in the thought listing task; a mean score was replaced for missing cases.

Results

Participants

In total, 141 Canadian women completed the study with 71 randomized to the original article (non-factual) and 70 randomized to the altered (factual) article. There were no significant differences between groups for any demographic variables nor for PA, all $p > .056$, with effect sizes ranging between 0.04 – 0.26. A complete listing of participant demographics can be found in Table 4.1.

Thought Listing Task

In total, 624 thoughts were recorded by the participants. Each thought was coded by the principal investigator, with experience in frequency analysis coding. A sample of the thoughts listed were used to develop the codebook, which was then reviewed with a second coder for agreement on codes, also experienced in thought listing frequency coding. A sample of 33% of the thoughts were coded by the second coder, and Cohen's kappa was run; interrater reliability

for personal relevance, positive statement, and negative statement were .78, .75, and .78 respectively, indicating a good level of agreement. All discrepancies were then resolved through discussion and to bring kappa to 1.00.

All listed thoughts were congruent with the content of the articles, showing the manipulation check was successful. Chi-square analysis showed that there was a statistically significant difference in the overall frequency of positive and negative statements, $x^2(1) = 156.39$, $p < .001$, with significantly more negative than positive comments. Participants in the altered article group were generally more inclined to comment negatively while readers of the original article were more inclined to comment positively though this was not statistically significant between groups, $t(139) = -1.28$, $p = .20$. There was also no significant difference between groups for personal relevance, $x^2(1) = 3.77$, $p = .05$. Thought listing code frequencies and examples are provided in Table 4.3.

Hypothesis Testing

Hypothesis 1

Results of the implicit believability RM ANOVA were not significant, with no group by believability interaction $F(1, 139) = 1.22$, $p = .27$, $\eta^2 = 0.01$, $d = 0.19$ suggesting that group assignment did not contribute to implicitly measured believability of the blog article. There was no within-subjects effect for implicitly measured believability, $F(1, 139) = 1.42$, $p = .24$, $\eta^2 = 0.01$, $d = 0.11$, suggesting that overall, participants did not automatically believe either blog article. Results of the implicitly measured affective evaluations RM ANOVA showed a significant within-subjects effect for implicitly measured affective evaluations after reading the blog article, $F(1, 139) = 10.62$, $p = .001$, $\eta^2 = 0.07$, $d = 0.27$, and examination of the means showed that there was stronger implicitly measured positive than negative evaluations in both

groups, reported in Table 4.2. There was no affect by group interaction F (1, 139) = 0.37, p = .55, η^2 = 0.00, d = 0.10.

Hypothesis 2

To test for differences between groups for the remaining variables, a MANOVA was computed using group (original article, altered article) as the between-subjects factor, and explicitly measured believability, affective evaluations, and intentions to exercise as the dependent variables. Results showed that there was an overall main effect for group, Wilks' Lambda = 0.93, F (3, 137) = 3.35, p = .02, η^2 = 0.07. Follow up tests showed a significant between-subjects effect for explicitly measured believability only F (1, 141) = 7.11, p = .01, η^2 = 0.05, d = 0.45. Examination of the means showed that those in the altered blog group (M = 3.58, SD = 1.18) disbelieved the article more than those in the original article group (M = 4.06, SD = 0.96). No other results were significant.

Hypothesis 3

A hierarchical multiple regression analysis with interaction terms was computed to test the third hypothesis that implicitly measured believability, explicitly measured believability, implicitly measured affective evaluations, and explicitly measured affective evaluations would predict intentions to engage in exercise. Group assignment was added to the model in the first step, which was not statistically significant, F (1, 139) = 3.45, p = .07. In the second step, implicitly measured believability, implicitly measured affective evaluations, explicitly measured believability, explicitly measured affective evaluations, and thought listing task valence scores were added to the model, which was significant F (5, 134) = 14.80, p < .001. Explicitly measured affective evaluations was the only significant variable (β = 0.57, p < .001). In the third step, interaction terms were added to the model, which was statistically significant, F (5, 134) = 7.03,

$p < .001$ though there were no significant interactions. A full summary of the model is presented in Table 4.4.

Discussion

The purpose of this study was to examine whether content accuracy of an exercise-based blog article contributed to message believability, and whether believing an exercise blog message was related to intentions to exercise. Although it was hypothesized that individuals would automatically endorse an exercise blog message as believable, this was not supported. Results showed that neither of the blog articles automatically activated associations of believability for participants. Similarly, Berry et al. (2011) found no significant differences for automatic believability between those reading an appearance- or a health-based exercise advertisement. According to the APE model, automatically activated evaluations represent spontaneous reactions to an object based on an individual's ability to feature-match the current object with prior, stored information. It is likely that participants were unable to match the blog article content with previously encountered exercise messaging and this lack of consistency resulted in an overall rejection of the newly encountered blog message. Historically, women have been encouraged to engage in high volumes of cardiovascular exercise and to avoid resistance training in order to achieve an appearance ideal, a myth that continues to circulate today (e.g., Pritchard, 2019). This may have created a mismatch in activated associations for women holding beliefs that cardiovascular exercise is the optimal modality for weight loss. As the blog message conflicted with popular, long-held myths about cardiovascular exercise and weight loss, participants were disinclined to believe the blog message.

In cases of insufficient feature matching, individuals may focus on secondary features of an object during propositional validation of automatically activated associations (Gawronski et

al., 2019). While participants were not automatically inclined to believe the blog articles, this was also the case for self-reported believability. Overall results showed that participants did not explicitly endorse the message as believable regardless of condition and thus, our second hypothesis was supported. However, while participants did not report believability of the blog articles, they did not disbelieve the articles overall, either. Individuals reading the original, factually incorrect article reported neutrality with regard to self-reported believability suggesting that they may have been unsure about the content. Previous research has shown that pre-existing beliefs and confirmation bias play a significant role in message evaluation (Metzger et al., 2010). For example, the use of fear messaging around the need to include resistance training as reported in the article, suggested that exclusive focus on cardiovascular exercise may contribute to loss of lean muscle tissue (e.g., "the rate of natural muscle decline starts after the age of 20…"). This may have led participants to question whether they were [erroneously] in danger of early onset muscle atrophy. Additionally, the use of buzz words (i.e., "skinny fat"), and sensationalized claims of goal attainment are familiar, and commonly seen in mainstream media (Willis & Knobloch-Westerwick, 2014). This familiarity may have contributed to participants' uncertainty about whether to believe the content. The use of this type of incorrect information may contribute to detrimental effects (Jiang & Street, 2017), such as body image or exercise disorders. Therefore, while it is encouraging that the information in the original article was not believed outright, it is concerning that such misinformation was not altogether disbelieved. This is particularly concerning among young women who may place an emphasis on achieving appearance ideals such as those promoted by the blog article, given that previous studies have shown that appearance-focused media may contribute to body dissatisfaction or lowered self-esteem (Tiggemann & Zaccardo, 2015).

In contrast, those reading the altered article reported slight explicit disbelief of the article. While the altered article used less-sensationalized language and promoted the benefits of resistance training in addition to cardiovascular exercise, the article also contained some of the original article's jargon and grammatical errors which combined, may have contributed to participants' perceptions of disbelief. Previous research suggests that features such as poor grammar and spelling may contribute to more negative evaluations by readers (Appelman & Sundar, 2016; Metzger, & Flanagin, 2013). It may be that readers of the altered article expected an exercise message focused on a sustained approach to healthy weight loss, and endorsing the health benefits of resistance training would incorporate more scientific evidence to support the content. As experienced web users, many young adults are particularly at ease with the online environment as a source of information (Vaterlaus et al., 2015). This potentially lifelong familiarity may have contributed to a greater examination of the exercise information presented, and prompted readers to critically examine and question the content of the message. Finally, the altered article highlighted that age-onset muscle decline does not begin until middle age. Perceived relevance may weigh heavily on perceptions of believability and given the gap in age, the altered article likely did not contribute to relevance for the women reading the altered article.

Previous work suggests that message believability may contribute favorably to behavioral intentions (O'Cass & Griffin, 2006). Regression analyses testing the predictive validity of believing an exercise blog message on exercise intentions showed however, that neither automatically activated nor explicitly measured believability of the message contributed to exercise intentions for either condition. This is unsurprising given the lack of polarity of explicitly measured believability scores for participants in both groups, and it is likely that participants did not believe the message sufficiently to have much effect. Therefore, our third

hypothesis was not supported. Given the focus on resistance training to achieve an appearance ideal (i.e., thin, sculpted, toned), women reading the articles may have regarded the message that women are unable to "become big, bulky" as a result of resistance training as possible but that it did not apply to them and thus, they did not intend to engage in the promoted forms of exercise. These results are consistent with findings from Berry (2011) reporting that explicitly measured believability was not related to intentions in either a health- or appearance- based message. Information fatigue may have also factored in such that participants read the information as asked, but were already familiar with similar content and therefore did not deem the information novel or worth acting on. Indeed when information about a health topic is abundant or complex, individuals may feel ambiguous about the information, refrain from decision making, and have lower behavioral intentions as a consequence (Han, Moser, & Klein, 2007). However, the current study also showed that explicitly measured affective evaluations positively predicted intentions for both groups, similar to previous studies (Berry et al., 2011; O'Cass & Griffin, 2006). Affective evaluations are a strong and potentially independent predictor of intentions (Conroy & Berry, 2017; Courneya et al., 2006; Rhodes & Kates, 2015). Overall, participants expressed positive, automatically activated affect in both conditions, but these did not contribute significantly to the model. However, participants were a generally active group, with average weekly moderate-vigorous PA only slightly below recommended levels. It is likely that the blog messages were congruent with already-held affective evaluations of exercise generally, and that upon propositional validation participants expressed stronger intentions to exercise as already-intenders. Given the relationship between exercise-related affect and intentions, and that believability did not predict intentions to exercise, it may be that affective evaluations are the more salient outcome of exercise promoting messages.

Besides adding to the limited body of research examining message believability on exercise intentions, this study has several strengths. Firstly, the study included a socioeconomically diverse sample of women from all ten Canadian provinces providing a representation of young adult women from across Canada, and contributes to the generalizability of the findings. Secondly, using a propositional duality model contributes to the literature towards a more complete understanding of the role that content belief may play on exercise intentions. Thirdly, using a real-world blog article in its unaltered format allows for a more naturalistic approach to examining reader perceptions of online content. Alongside these strengths however, there are also some limitations. The use of a still-shot image of the blog article does not allow for a realistic website experience for readers, which would generally include the ability to search and navigate within the blog. Future studies should also examine the effects of exercise media on a more sedentary or new-to-exercise population, as well as other age groups to determine whether novice exercisers, or those less familiar with digital media are more inclined to believe the information found online. Additionally, participants were not asked to report prior exercise knowledge which may have influenced their perceptions of the blog article. Finally, the use of a post-test only design does not account for pre-test perceptions of exercise media believability generally, nor whether participants were exercise intenders prior to reading the blog articles.

Conclusion

The results from this study are promising given that participants did not implicitly nor explicitly endorse the original, factually incorrect article as believable. However these results should be regarded with caution, as it is likely that participants believed some of the promoted advice in particular, in the factually incorrect original article. Future research should assess

which aspects of the message specifically, are believed by readers in an effort to curtail potential misinformation. On the other hand, believability was not a significant factor for predicting exercise intentions after a single exposure, and exercise promoters may need to remain well-versed in both evidence-based and erroneous exercise information circulating online, if any efforts to dispel misinformation are to have an effect.

Table 4.1. Participant Demographic Variables

Variable	
Age *M*(SD)	24.31 (3.30)
Body Mass Index *M*(SD)	24.55 (7.03)
GLTEQ weekly minutes *M*(SD)	
Mild PA	98.95 (197.14)
Moderate PA	105.91 (204.64)
Vigorous PA	37.07 (83.38)
Moderate-Vigorous PA	142.99 (239.15)
Education *N*(%)	
high school	35 (24.8%)
college/vocational school	16 (11.3%)
undergraduate degree	58 (41.1%)
post graduate degree	25 (17.7%)
professional degree	6 (4.3%)
other	1 (0.7%)
Income *N*(%)	
less than $25, 000	23 (16.3%)
$25, 000 - $49, 999	38 (27.0%)
$50, 000 - $74, 999	29 (20.6%)
$75, 000 - $99, 999	6 (4.3%)
greater than $100, 000	26 (18.4%)
prefer not to answer	18 (12.8%)
Ethnicity *N*(%)	
Aboriginal	1 (0.7%)
Arabic	1 (0.7%)
African	2 (1.4%)
Asian	29 (20.6%)
Caucasian/European	85 (60.3%0
South Asian	4 (2.8%)
Southeast Asian	2 (1.4%)
Other	12 (8.5%)
Prefer not to answer	2 (1.4%)

Table 4.2. Means (SD) for All Variables and Implicit Believability, Implicit Affect Sensitivity (*d'*) Scores by Group with Between Groups RM ANOVA and Independent T-test Results

	Altered Article Group		Original Article Group		Between Groups ANOVA				Between Groups T-test		
Variable	*n*	*M(SD)*	*n*	*M(SD)*	*F*	*df*	*p*	*η2*	*t*	*df*	*p*
Implicit Belief	70	0.92 (0.43)	71	0.96 (0.47)	0.81	1, 139	0.37	0.00			
Implicit Disbelief	70	0.97 (0.42)	71	0.87 (0.42)							
Implicit Positive Affect	70	1.35 (0.51)	71	1.33 (0.59)	0.40	1, 139	0.53	0.00			
Implicit Negative Affect	70	1.23 (0.51)	71	1.16 (0.54)							
Explicit Belief	70	3.58 (1.18)	71	4.06 (0.96)							
Explicit Affect	70	4.34 (1.50)	71	4.44 (1.28)					-2.67	139	.01
Intention to Exercise	70	4.32 (1.77)	71	4.83 (1.45)					-0.42	139	.68

Table 4.3. Thought Listing Task and Code Frequencies

	Altered Article			
	Personal Relevance	Positive Statements	Negative Statements	Valence (positive - negative)
Frequency	48	78	172	-94
Example	I should probably work out more	The article was an easy read and informative.	Of course, all that to sell you something.	
	Original Article			
	Personal Relevance	Positive Statements	Negative Statements	Valence (positive - negative)
Frequency	66	91	147	-56
Example	I would probably count as 'skinny fat'	Seems like reasonable advice	Quite vague and not very science based.	

n = 624 thoughts coded

Table 4.4 Hierarchical Multiple Regression Examining Believability and Affect, on Intentions to Exercise

Block	Predictors	R2	Adjusted R2	ΔR2	Sig. Δ*F*	B	SE	Standardized B	Tolerance	VIF	Part *r*	*p*
1	(Constant)	0.02	.02	0.24	.07	3.81	0.43					<.001
	Group					0.52	0.27	0.16	1.00	1.00	.16	.07
2	(Constant)	0.37	0.34	0.35	<.001	0.73	0.65					.02
	Group					0.41	0.23	0.13	0.94	1.01	.12	.08
	Implicit Belief					-0.28	0.24	-0.08	0.96	1.05	-.08	.24
	Explicit Belief					0.09	0.12	0.06	0.73	1.38	.05	.47
	Implicit Affect					0.12	0.22	0.04	0.91	1.10	.04	.60
	Explicit Affect					0.66	0.08	0.57	0.95	1.05	.55	<.001
	Thought Listing Valence Scores					0.02	0.06	0.03	0.77	1.31	.02	.73
3	(Constant)	0.38	0.32	0.00	.98	0.98	0.80					.22
	Group					0.41	0.23	0.13	0.94	1.07	.12	.08
	Implicit Belief					-0.15	0.37	-0.05	0.43	2.35	-.03	.68
	Explicit Belief					0.04	0.16	0.03	0.44	2.28	.02	.81
	Implicit Affect					0.12	0.32	0.04	0.44	2.26	.02	.74
	Explicit Affect					0.66	0.11	0.56	0.57	1.76	.42	<.001
	Thought Listing Valence Scores					0.05	0.08	0.07	0.46	2.19	.05	.50
	Group * Implicit Belief					-0.23	0.49	-0.05	0.42	2.38	-.03	.64
	Group * Implicit Affect					0.02	0.46	0.00	0.42	2.40	.00	.97
	Group * Explicit Belief					0.12	0.25	0.05	0.43	2.30	.03	.65
	Group * Explicit Affect					0.03	0.17	0.02	0.53	1.906	.01	.86
	Group * Thought Listing Valence Scores					-0.08	0.12	-0.07	0.44	2.259	-.05	.51

Table 4.5 Correlation Table

	Implicit Belief	Explicit Belief	Implicit Affect	Explicit Affect	Thought Listing Valence	Intention
Implicit Belief	1					
Explicit Belief	-0.006	1				
Implicit Affect	.181*	0.154	1			
Explicit Affect	0.048	0.121	.188*	1		
Thought Listing Valence	-0.053	.473**	0.017	0.117	1	
Intention	-0.039	.174*	0.145	.583**	0.140	1

N = 141

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Chapter 5. Study 3: A Qualitative Exploration of Exercise Blog Believability Among Emerging Adult Women

This study is under review: Ori, E. M., McHugh, T. L. F., & Berry, T. R. (2020). A Qualitative Exploration of Exercise Blog Believability Among Emerging Adult Women. *Qualitative Research in Sport, Exercise and Health.* Manuscript submitted.

Introduction

Time spent using the internet increases annually, with global internet access and social media popularity and usage continuing to climb (Statista, 2020). Emerging adults aged 18-30 years are particularly familiar with the online environment being the first generation to grow up with digital media, and are experienced with using the internet as a source of information (Percheski & Hargittai, 2011; Prensky, 2001). Previous work has demonstrated that this population prefers online sources such as social media, when seeking information related to exercise (Ori & Berry, 2020). However, while emerging adults are generally able to access the information they seek easily, that does not mean they are capable of effectively searching and sourcing appropriate sources, given the wealth of information that they encounter online (Harper, 2014). In fact, previous research suggests that those attending university are unable to determine how to operationalise the health and exercise information they have found online (Vega, 2018). Familiarity with digital media may not translate into healthy behaviour uptake, in particular for exercise (Vega, 2018). It may be that factors other than familiarity and easy access to online exercise media may need to be considered when examining its influence on an emerging adult population.

Previous work has found that exercise-based social media may be both a barrier and a motivator to exercise uptake (Divine et al. , 2019; Vaterlaus et al., 2015). While exercise-related

social media may inspire or encourage young adults to try a new workout or exercise, findings from the 2015 study also acknowledged that time spent online displaces time otherwise spent in active pursuits for young adults (Vaterlaus et al., 2015). Similarly, focus groups examining the influence of exercise content available on Facebook found that the platform contributes to both positive and negative exercise motivation (Divine et al., 2019). Reasons for the positive influential effects of social media in both studies included the social nature of these platforms and the ability to see other's progress through posts and images (Divine et al., 2019; Vaterlaus et al., 2015). Yet this may also contribute to negative influences of online media as individuals compare and contrast personal situations with doctored images found online, potentially misrepresenting outcome expectations (Divine et al., 2019; Vaterlaus et al., 2015). Indeed, personal relevance may be an influential aspect of selecting an exercise message. Previous work has shown that when a topic is personally relevant, participants were likely to spend more time deciding which articles to read (Winter & Krämer, 2012). It may be that exercise-based social media contributes both positively and negatively based on user perceptions of relevance, and the manner in which emerging adults compare themselves to the content found online.

Blogs promoting exercise and healthy lifestyle are a popular form of social media in health and fitness (Boepple & Thompson, 2014). Exercise blogs are personal websites that are used to disseminate exercise information whether it be personal, anecdotal experiences of exercise uptake and lifestyle change, or professionally-driven content aimed at promoting specific services or products (e.g., personal training or fitness equipment sales). Although emerging adults may make use of easily available online social media when accessing exercise information, little is known about whether they believe the information they have viewed, and what factors contribute to believing or disbelieving this information. Although limited, a small

body of research has assessed physical activity message believability among emerging adults (Berry et al., 2011; Ori et al., in press). One study has shown that emerging adults attending university who automatically believed a physical activity message touting appearance outcomes, also reported lower intentions to be active (Berry et al., 2011). While another study found that women aged 18-30 years did not automatically believe an exercise blog message regardless of content veracity (Ori et al., in press). However, those reading a factually correct exercise blog article showed greater self-reported disbelief of the message than those reading the factually incorrect version of the same blog article though article believability was not related to exercise intentions. Despite these findings, it is unclear which factors contributed to believing or disbelieving an exercise message. With the abundance of exercise media available online, and the potential influence these media may have on exercise-related cognitions, more research is needed in order to gain a deeper understanding of the factors that may contribute to believing an online exercise message. In turn, this may assist exercise professionals with creating salient, useful messaging for the online environment in which emerging adults can act upon to become–or remain–physically active.

Previous work has shown that while online exercise media is aimed at both men and women, a larger proportion of the exercise content found online is targeted to women (Boepple et al., 2016; Tiggemann & Zaccardo, 2018). Additionally, women may be more inclined to seek online information related to health than males (Atkinson et al., 2009; Percheski & Hargittai, 2011). Findings from previous studies suggest that this may be because women are likely to seek health information not only for themselves, but for others in their care such as children, parents, and partners (Lagoe & Atkin, 2015). Yet, there are no known studies exploring how emerging adult women perceive these media, nor how these media may influence perceptions of

believability and personal relevance to the topic. Therefore, the purpose of this study was to explore which aspects of an exercise blog message are perceived as believable and personally relevant. The following research questions were addressed: (a) What factors contribute to readers (dis)believing the information presented to them from non-professional, exercise bloggers? and (b) What influencing factors resonate with blog readers, and create personal relevance to the messages found in exercise blogs?.

Materials and Methods

Qualitative description as described by Sandelowski (2000), was used to guide this research. This method is often used to explore phenomena that are not well studied nor understood and therefore offers a comprehensive summary of the phenomena while remaining close to the data (Sandelowski, 2000). A benefit of qualitative description studies is that findings are presented in everyday language without a high degree of abstraction, providing an account of the phenomena that are data-near (Sandelowski, 2000). This allows researchers to respond to questions using data that offer 'factist perspectives' that is, that the data are 'more or less accurate and truthful indexes of reality' (Sandelowski, 2010, pp. 80). Ethical approval was received prior to study recruitment from the University of Alberta's Human Research Ethics Board.

Participants

In line with qualitative description, the current study used a purposeful sample in order to gain 'information-rich' data about the topic under study, from individuals that could speak to their personal experiences with the subject matter (Sandelowski, 2000). Participants were recruited via public bulletin boards and social media channels, and self-selected to participate in the study. Inclusion criteria included identifying as a woman, use of the internet to access

exercise information, being 18 – 35 years and having a self-reported solid understanding of written and spoken English. Participants were recruited from a large, Western province in Canada.

Data Generation

Data were generated using semi-structured interviews with probing questions, which allows participants to expand upon personal experiences and reflect on the topic (Sandelowski, 2000). Semi-structured interviews are a useful tool for data generation when there is prior knowledge of the research topic that may be incomplete or insufficient to anticipate respondents' answers (Richards & Morse, 2007). Interview questions were therefore developed prior to participant recruitment, based on previous work examining media believability (e.g., Berry et al., 2011; O'Cass & Griffin, 2006). This approach to data generation contributes to a more complete understanding of the current phenomena, and is regularly used in qualitative description studies (Mayan, 2016; Sandelowski, 2000). Interviews took place in a semi-public location at a local library or via secure online video conferencing software, and were 30 – 60 minutes in length.

Participants were each presented with the blog article entitled, 'The one thing many are doing too much of that could be sabotaging your progress!'. The article focused on the use of cardiovascular exercise as a suboptimal means to achieve fat loss, while simultaneously presenting weight training as a more beneficial alternative. The content of the article made use of exercise jargon commonly seen in mainstream media such as 'lean body mass' and 'optimal fat burning'. The article informed readers of several erroneous myths, including that natural muscle decline begins at age 20, that women do not produce testosterone, and that weight training combats depression. No authorship information was included in the blog article apart from author/blog owner name and one image, presumably of the blog author/owner.

After providing personal demographic information and discussing exercise media generally, participants were each shown the exercise blog article and asked to read it in full. Following this, interview questions pertained to the assigned blog article reading with a focus on (a) personal thoughts about information accuracy and reliability (b) reasons for believing or not believing the information contained within the blog message (c) personal knowledge about exercise and (d) personal interest in using the assigned blog article as a source of exercise information. All participants were thoroughly debriefed at the end of the interview through conversations with the interviewer, to ensure no unsubstantiated claims made by the blog article were believed by participants. All interviews were audio recorded, which were then transcribed verbatim and transcripts were used for analysis purposes. All identifying information was removed (e.g., participant name), and participants were each assigned a pseudonym for the purposes of data analysis and reporting.

Data Analysis

Qualitative content analysis was used to analyze interview transcripts which is a preferred analytic approach for qualitative descriptive research (Sandelowski, 2000). Through an iterative process of reviewing and re-reading the data, specific instances were identified in the transcripts and used to create codes and descriptions of the data (Mayan, 2016). For example, the code ‘misrepresentation’ was created and described as ‘how media distorts the efforts behind an exercise making it look easier than it is, or not difficult’ while the code ‘attention grabbing/lack of credibility’ was described by ‘use of popular/trendy jargon, content is only there for attention, no weight/credibility to the claims’. An inductive process was used, organizing the data such that similar codes were grouped together to create groupings, which there then collapsed to create higher order categories (Elo & Kyngäs, 2008). These categories were then consolidated and

themes were generated, focusing on data-based descriptions (Elo & Kyngäs, 2008). For example, the codes ‘misrepresentation’ and ‘attention grabbing/lack of credibility’ were collapsed into the theme ‘sensationalised information’. Sub-themes representing specific perspectives were then grouped within each theme (Elo & Kyngäs, 2008). Themes and subthemes were supported by explanatory quotes.

Criteria used to assess rigour in qualitative research varies, and is dependent on the study purpose, methods, and discipline (Mayan, 2016). In order to address trustworthiness of the study, several approaches were taken. The current landscape of online media has been contentious in recent years, with concerns over the truth or falsity of online claims and how this content may affect online media consumers. Such concerns transcend all subject matter however, when viewed through the lens of current low-level physical activity in particular in Canada (Statistics Canada, 2019b), the current study meets Tracy’s criteria (2010) of a ‘worthy topic’ being both timely and relevant. An appropriate and representative sample of individuals was sought, consisting of those who could speak in detail about the topic of inquiry (Mayan, 2016). Findings include rich, thick description of the experiences of study participants, one verification strategy recommended by Mayan (2016). Finally, ensuring that an audit trail was maintained contributes to the confirmability and dependability of the findings (Creswell, 2013; Mayan, 2016).

Results

Participants

A total of ten women participated in the study, with a mean age of 25.6 years, and a mean Body Mass Index of 21.54 kg/m^2 (SD = 1.49). All participants self-identified as Caucasian, and six participants were current students attending post-secondary institutions of which four were currently enrolled in kinesiology/physical education degree programs, one was a medical student

and one was a history student. Two of the participants were working full time as personal fitness trainers, one as a physiotherapy assistant, and one as a researcher in oncology. All participants reported regular participation (3-6 days per week) in physical activities such as running, yoga, recreational sports, and resistance training.

The believability of reading an exercise blog among women that use the internet as a source of exercise information, are represented by four themes: (a) reasons for source preference (b) information relevance (c) selective believability and (d) projecting believability.

Reasons for source preference

All participants explained which aspects of an exercise information source are most important for them. Participants in general cited accessibility and ease of access to information online. Specifically, participants preferred social media platforms such as YouTube, Instagram, and Pinterest as an online source of exercise information although other online sources such as specific websites and search engines were also mentioned frequently. A full list of source preferences is presented in Figure 5.1. Reasons for preferring specific sources varied however, and three subthemes emerged: (a) appealing content (b) preference of format, and (c) avoidance of sources.

Appealing Content

Participants discussed specific aspects of the content found on their preferred platforms, which made the content attractive to them individually. Participants tended towards sources that offered exercises or workouts that were consistent with personal interests or goals. For example Angela claimed, ‘it's just finding individuals that put out content that I'm interested in. So like the types of workouts that I'm interested in like the type of difficulty, like the type of energy involved, so just seeing stuff like that.’ Similarly Isabel, a competitive figure and physique

athlete, mentioned the importance of content on her goals, noting that she uses specific websites based on the usefulness of information:

> [website] just have a lot of information so you can read about that um, specific exercise, you can usually see a video of it being done and then there'll be links of it where that exercise is in different workout plans which would then pull you into another section where could find other exercises that are fit nicely with that one or would work the opposite side.

Others tended to prefer clear and easy-to-follow content, such as the visual guidance that can be obtained by viewing videos. In this case as discussed by Jill, this allows for modeling the exercises due to clarity and applicability of informal presentation rather than the scientific, clinical approach to information dissemination:

> A lot of the more I guess accurate and official stuff it's difficult to understand as so just the videos you can kind of figure out exactly what you need to look like and what the proper form looks like and everything.

However, some participants were less concerned about format and focused more on the novelty of the information. This allowed them to make use of the exercise information by putting into action some of the new or interesting exercises they could find online. In this way, content was appealing when it inspired or motivated them to perform a workout or exercise, as Jessica explained:

> I genuinely like social media of sorts if I'm looking for like home workout or whatever and if I, you know, just want new ideas. I'll, I don't know I'll just go on Pinterest or whatever and just like it's more for ideas […] for me to sort of like, inspiration or just like

> fun, fun things to do […] more just creative inspiration and like oh like 'what can I do today?' type of things.

Preference of Format

Content was not the only reason for source preference. The way in which content was presented whether via video, imagery, or article-based information, was also a strong contributing factor for participants. As Marie noted:

> I'm a visual learner. So I like to see people doing things and I also read a lot at work right now. So I just want to watch things or look at things and don't really want to dive deeper into some of the information um [pause] I do like the visual representation you can get on YouTube or Instagram or social media.

Tamara commented similarly, expressing a preference for video formats which she perceived as more motivating when performing it on her own:

> [social media accounts] have like the short video clips […] You're like, 'oh yeah, that looks good, that looks good, I can see, I can understand how to do that exercise' um, and I think that visually seeing it compared to a picture it makes me kinda more motivated to do it somehow, and so I, I like seeing those.

Format preference also extended to ease of access, so that information could be obtained with little effort. For many participants, this was a key factor in source preference as it required limited time and effort to source the desired information. For example, as Tamara remarked, 'online is probably the easiest [pause] easiest resource. Quick.' Ease of access and ability to quickly find information was also the reason Andrea, a professional personal trainer, preferred online sources not only when seeking exercise information for personal interest, but when seeking exercise information for her personal training clients as well:

> I've got both sides of it. Looking for stuff for myself and also for my clients because they come up with all sorts of crazy questions and ideas. Um, so I would say online is probably like the big source just because it's readily available.

She elaborated that sources that were more easily accessible through regular engagement with a social media platform, where consistent exposure to topics of interest were seen in her personal feeds:

> I find more like the articles, Facebook [pause] um, sometimes Instagram depending on what it's on, are more like, they're all, those are easy like they're ease - easily accessible, I find because it's really easy just to like, go and look instead of like trying to come to the library and find the book.

Avoidance of Sources

While participants were clear about which sources they prefer when seeking exercise information, participants were also resolute with regard to online sources they would avoid. Primarily participants noted that certain sources should be avoided when the content or publisher were questionable or unknown to them. In this way, participants focused more the quality of content rather than format preference, as Jessica remarked, 'I know that there's a bunch of garbage that's, that's out there. And so when it comes to information, I generally try to keep it to academic sources like, especially if it's things like I don't know.' While Angela discussed that she avoids sources promoting unhealthy behaviours, noting how online sources may influence her, a change in which sources she prefers to access:

> They've changed in the last year, the types of accounts that I'm attracted to because I realised that I'm pretty influenced by these people and so it kind of matters to me that

> there are people that are like eating the right number of calories a day and aren't like, starving themselves and like have good mental health.

Jill also commented that she has re-evaluated which online sources she accesses. She stated that she has done this in order to avoid sources, specifically YouTube accounts that promote unhealthy or unrealistic standards for women:

> I mean like the way that they're dressed the way that they look they're all wearing like full makeup if it's females like it's, it's very much so not real thank you. Because when you go to the gym and you see everybody else there, we all look kind of terrible and we're all very tired and sweaty and nobody's really wearing makeup. And so it's not like an accurate portrayal of what exercising is […] Um, for a long time I did follow them especially through high school. And then lately I've just been kind of it's just easier not to. It's just nicer not to and then so it's just kind of nicer to find ones that are a little more realistic.

Information Relevance

After reading the blog article, participants were asked to discuss their perceptions of the article and its content. Participants commented broadly about various aspects of the blog article, the topic, and how it either related to them, or to someone they knew. A common area of discussion also included larger impacts of the blog article on the public, and women in general. From these discussions, two subthemes emerged related to the relevance of the information: (a) relevance to self and (b) relevance to others.

Relevance to self

Relevance to the self related to discussions whereby participants relayed their own knowledge or experience about the topic of the blog article. This may have contributed to a

perceived urgency to attend to the information presented in the article. Such was the case for Tamara, who commented on how such an article may influence her personally, despite her background knowledge on the topic of resistance training and early onset muscle loss, as a physiotherapy assistant:

> A lot of people reading this [blog article] I'm going to assume are over 20 or at least close to it. And that's like you and me like being in my twenties like reading that in my home […] and I know that that's not true. But of course it sticks with you.

Yet other participants acknowledged the potential for the blog article and others like it to focus on insecurities among women. Participants such as Jessica commented that the appearance-based nature of the blog article was the reason it lacked personal relevance, as she stated:

> Well, there is a lot of pressure on physical appearance and on attaining this like this 'fitspo body' […] and I know because I've been there like, I've been just in my own personal experiences like I was, I don't think it was, I wasn't pulled in because of this kind of stuff.

Relevance to Others

While many participants made reference to personal knowledge of the topic and supported or rejected the blog article's promoted advice about exercise modalities, all participants commented on the content of the article and its potential influence on other women in particular those with little or no knowledge in the exercise sciences. In particular, the persuasive nature of the language used in the blog article was concerning for some participants, as Tamara made note:

> I also think this is just kind of a dangerous thing to say to people [points to paragraph in blog article that says 'being cardio crazy could be sabotaging your progress'] because that would discourage them from the […] might start discouraging people from doing cardio activities, which isn't a good thing um [pause] just by saying, just by saying something like that. For people who might not necessarily know better or will be following something like this and say like 'this woman's really fit and she says cardio's like, don't focus on cardio as much' and then they'll kinda use that as a confirmation to stay away from it.

This was a commonly voiced concern about the blog article content, given both its focus on appearance-based outcomes, and the persuasive language targeting common insecurities among women. Specifically Kelly, a cancer researcher, voiced concerns about scare tactics used by the blog article, and the influence of such approaches on women's thoughts specifically related to body image and current exercise behaviours:

> It's targeting people's like, insecurities and a lot of really common fears that people have about their bodies, especially like, I know I said this before but when it says things like 'skinny fat' and um 'the rate of natural muscle decline starts after the age of 20 and age of 45, it accelerates even more…' and it's trying to get people to like, you have to *panic* about what they're currently doing because what they're doing is so wrong. […] I think any, anything like this, any post or source that is just trying to make people afraid of what they've been doing or like self-conscious about they've been doing or think what they're doing is wrong and tried to almost guilt them into buying something or doing something different instead of just correctly informing them with sources.

Though not all participants were concerned with the potential negative outcomes of reading the blog article. Some participants felt the article was aimed at novice exercisers as a way to attract readership. For these participants, the persuasive language used was seen as a potential tool to attract new exercisers to engage in weight training, as promoted by the blog article. As Marie, a kinesiology student remarked, 'I just found it, the article for somebody who's new into fitness, definitely was well written in terms of trying to attract these low hanging fruit.'

Yet some participants identified the relevance of the content itself to other women, acknowledging that the blog article may prompt women to uptake the promoted exercise behaviours. However, this was not a concern for participants such as Sara, a second year kinesiology student who commented, "So I mean, I don't think if someone took them or if they took the advice of this person, they're not going to hurt themselves".

Selective believability

As a central focus of questioning in the interviews, participants were asked to discuss what factors contributed to their perceptions of believability, reliability, trustworthiness, and credibility related to the article and its content. Participants were divided in overall believability of the article, with varying contributing factors influencing article belief. From these discussions, participants were often conflicted about whether or not they believed the article. Conflicts of believability were common among all ten women, who found both believable and unbelievable elements to the article. More specifically, many participants cited that they attended only to certain aspects of the article that they felt were believable, overlooking other portions of the content. The inverse was also true with regard to unbelievable elements of the content. Thus, believability of the article appeared to be selective; four subthemes emerged related to factors

that contributed to selectivity of article belief for participants: (a) confirmation bias (b) sound arguments (c) lack of evidence and (d) sensationalised information.

Confirmation Bias

For individuals who felt the article was believable, several factors contributed to this perception, primarily when information presented in the blog article conformed to previously held beliefs or behaviours. This confirmation bias led participants to at least at first believe the content they had read. Many of the women commented that aspects of the article made use of jargon or common exercise terms that were familiar and that this familiarity factored into personal beliefs about exercise and weight loss. Such was the case for Angela, a medical student who stated that women rely heavily on cardiovascular exercise for weight loss, but who should consider adding resistance training to their routines:

> It's defending a concept that I guess I kind of believe in and it was using like a lot of terminology that I recognise and kind of agree with like the concept itself is something that I have talked to my mother about for example, who will just run and then complain she's not getting the physique she wants.

While Marie noted that the familiar language used in the article contributed to consistency with information she had learned from other exercise media, 'The term "skinny fat" I've seen in other articles so I know that like when they talk about like the weight - the more muscle you carry […] so that section I found pretty convincing with the fat loss.'

Sound Arguments

In terms of article believability, several participants felt that the basis of the article was sound, providing reliable arguments that contributed to perceptions of believability. Argument cohesion and perceived logic contributed to perceptions that the information presented in the

article was believable, allowing participants to hone in on this aspect of the content. Participants commented that the article presented arguments that seemed legitimate and rational. This contributed to attending only to the content that seemed reliable, and a disregard for other parts of the article. As Isabel stated:

> Sometimes [pause] you just get caught in what you're reading and you're like 'yeah that makes sense' and I think you think about one thing making sense you don't necessarily start thinking about any of the other stuff that you read you just like, all the parts that stand out the most make sense, so you just assume that the rest makes sense too.

While Courtney, a professional personal trainer also supported this perspective remarking, 'she said "you don't have to ditch the cardio. Just don't overdo it." I guess makes sense.'

Lack of Evidence

For participants that cited disbelief in portions of the blog article, lack of supporting evidence was a primary reason to question the content of the blog article. This included lack of evidence in the blog article to support the author's qualifications. One professional personal trainer, Courtney, reported that her primary reason for disbelief was related to the author, 'I don't know who she is. I don't know what her education is, her credentials, anything like that.' While a few participants also commented on the medium as a source of lowered perceived believability, as stated by Jill, 'It just seems kind of like, you know, when people have blogs and then they can just write whatever they think is best or whatever they feel is the best way to do it.' However, most participants focused on the lack of evidence to support the claims made by the article noting that the blog article did not contain any scientific support, which contributed to

perceptions of disbelief. Specifically, participants reported being concerned about a lack of referencing or inclusion of scientific data within the article as Jessica claimed:

> Well, there's all of these like, you know, like quote-unquote factual claims that don't have any type of referencing to them. Like there's no link. There's no reference to a study that has [pause] that has shown this that's in like, a peer-reviewed journal.

Sensationalised Information

Attention-grabbing, dramatic claims of goal achievement and the use of commonly published buzz words also contributed to perceptions of disbelief about the article content. For many participants, these tactics were perceived as a way to lure in readers, rather than provide information or support exercise behaviour. For many participants, this was seen only as a means of self-promotion for the blog/article, rather than an opportunity to educate women about exercise, as Tamara commented:

> I'm also really cautious of posts like this that use a lot of buzz words that are really popular in the media. This one that got used quite a bit um like ‘skinny fat’. It also had like ‘beach body’ that's obviously all over the place, like ‘sculpted’, ‘sexy’. Like those aren't [pause] yeah things like that are to grab your attention and not to actually inform you about something.

While other participants noted that the sensationalised claims made in the article contributed to perceptions of disbelief, due to the misleading nature of grandiose claims. This was equated with common tactics used to attract readers or to pander to current exercise and appearance-ideal trends as Marie, a national team endurance athlete commented:

> Whenever I see like claims or like if I start an article and at the end they make some claim about like 'lose a pound day for the next 30 days' or they make these crazy claims, I question the article.

Projecting believability

One significant and unanticipated theme emerged out of conversations with participants such that it became clear that a relationship existed between article content and perceptions of the article believability to others. Participants frequently commented that overall, the article was something they felt was believable to other women, to a general public but not to the participants themselves, necessarily. This was evident in many of the discussions as participants pointedly remarked on a perception that the blog article and others like it, can easily be accepted as fact, and believed by other women. Such was the case for Jessica, a master's student in kinesiology, who was clear that she did not believe the content of the article, but that others likely would:

> So to me like even just reading the first few sentences. It's like immediately like hey, this is, this is garbage. […] It's just so for believability, I guess I would, I would have to say that if you weren't educated any area, then you would, I could see this being something that people would believe to be true.

Participants were concerned about the impact reading the blog article might have on exercise-related thoughts and behaviours. In particular, participants were concerned that by focusing on both women's insecurities and trending fitness myths, the blog article may attract readership and be perceived as a legitimate source of exercise information. Andrea, a professional personal trainer expanded on her perceptions of the article, and how it relates to some of the individuals she works with in the fitness environment, and to the public in general:

> It like pulls out like, those terms like, lean body mass, BMR […] it's pulling out the stuff that like lots of women are like after right now and I think that's the other thing so it's those things that they would search so you know there's, I find, especially like, I wouldn't say I'm one of those just because I know how like, things work but I would say like, lots of women are like, 'ohhh' especially lots of my clients right now […] So just the way it's written, I feel that it would be believable for the majority of people.

Discussion

Comfort and familiarity with using the internet as a preferred source of exercise information was evident in discussions with participants, as noted by the source preferences cited when seeking exercise information, which was similar to previous studies (Ori & Berry, 2020). Ease of access, characterised by the ability to quickly locate specific items of interest and appeal were among commonly cited reasons for preferring the internet over other, more traditional sources such as textbooks or scholarly sources. Ease of accessibility has been shown to contribute to the success of social media as a self-support tool for health behaviours (Latkin & Knowlton, 2015). In many cases, participants in the current study discussed that preferred sources may contribute to exercise behaviour through modeling as participants seek content that will allow them to emulate the exercise or workout promoted online. Yet these findings conflict with previous work suggesting that young adults are unable to make use of the exercise information they find online so that it is viewed, but not acted upon (Vega, 2018). Participants also discussed that format was a primary driver of source preference which revolved around format and the utility of the content however, participants avoided sources that they considered low quality. Many of the women interviewed claimed avoidance or at the very least concern with sources that lacked evidence to support claims, or those that may not be promoting healthful

approaches to exercise behaviour. This contrasts with previous work suggesting that emerging adult women do look for exercise information specifically related to achieving an appearance ideal (Ori & Berry, 2020). The nature of discussing exercise seeking habits may have been considered personal and participants decided to focus on health outcomes for the purposes of an interview about exercise media. It may also be that the women participating in the current study, nearly all of whom were current or former students from a health discipline, are a unique sample with an innate focus on achieving health outcomes rather than appearance ideals.

As discussions shifted to focus on the assigned exercise blog article, participants pointed to various aspects of the article and how they felt it related to them, individually. Many of the women discussed familiarity with the blog article's content, based on previous experiences or knowledge about the topic of fat loss and achieving an appearance ideal. Several women commented on the influential nature of the information found in the blog article and the commonality of similar and potentially misleading claims found in mainstream media such as magazines as well as online (c.f., Boepple et al., 2016; Willis & Knobloch-Westerwick, 2014). It is concerning that emerging adult women, in particular those already studying or working in health, may be aware of the potential truth or falsity of online claims and yet still be susceptible to persuasive messaging aimed at appearance rather than health outcomes. Participants spent considerable time relaying concerns about the content of the blog article on the exercise-related cognitions and behaviours of other women. This suggests that these women feel equipped with the ability to ultimately overcome influences of popular online exercise media, but may not feel that the general public is able to do the same. In line with work by Lagoe and Atkin (2015), it may be that emerging adult women are aware of and concerned for the health of others in their lives, contributing to a greater awareness of the influence of these media on family members and

friends. This is also similar to previous research suggesting that youth are concerned about the potential for current, unrealistic exercise media to contribute to health problems (Wiklund et al., 2019). Given the low levels of physical activity in Canada (Canada, 2017), these concerns are well-placed. Discussions of this nature stemmed from participants that were involved in the health disciplines (e.g., kinesiology students and graduates or health sciences professionals), suggesting that those educated in the health disciplines are already aware of the influential nature of online exercise media and the potential harms it may cause. This is promising as new generations of professionals may contribute to work aimed at combatting exercise-related misinformation found online.

In terms of believability of the blog article, participants expressed that they were conflicted about whether or not they believed the content of the article. This is similar to experimental findings suggesting that exercise blog readers may be confused about the believability of exercise blog messaging (Ori et al., in press). In many cases, participants initially believed the article, with purposeful disregard of the questionable aspects of the content such as the factually incorrect information dispersed throughout. It may be that the selectivity of familiar content stood out to participants so that it confirmed previously held beliefs, and they were uninterested or unwilling to attend to other aspects of the article. Most participants commented that familiarity of the topic contributed to an inherent acceptance of the content of the article purely based on the subject matter, its consistent visibility in mainstream media, and the participant's understanding of such information as fact. Previous research has demonstrated that individuals tend to evaluate information more favourably when it conforms to previously held beliefs, and when it is consistent with other sources disseminating similar information (Metzger and Flanagin, 2013). It is also possible that participants evaluated the information favourably at

least initially, knowing that they were participating in a study about exercise, and attending an interview with the principal investigator, an exercise physiologist. This may have created a sense of trust in the blog article's content. However, as discussions progressed and participants reflected on the information they had read, many began to question the article content. Specifically, most of the women commented on a lack of scientific, supporting evidence to back-up claims made by the author. This also extended to questions of authorship and author qualifications, demonstrating an ability to think critically about the information presented. However, this was not an initial reaction for most participants and was only remarked on, upon reflection. Social media is often viewed by scrolling through posts populated in personal feeds. The use of sensationalised language was interspersed throughout the blog article and participants were quick to point out that for them, this is a commonly seen approach to attracting readers or as one participant claimed it was simply, 'click-bait'. In this way, such sources may contribute to misinformation about exercise as consumers rely on quick judgements about what they have viewed momentarily rather than employing thoughtful reflection and evaluation of the content (Metzger & Flanagin, 2013). However, if emerging adult women are encouraged to reflect on the information they view online, it may be possible to overcome unverified, sensationalised, potential misinformation circulating in abundance. Greater attention is needed in creating media literacy and critical thinking skills directed towards audiences of online media.

While participants were conflicted about whether or not they believed the blog article, content believability was often conflated with the source (author, medium). Previous research has called for an examination of content believability as a unique variable, separate from authorship and medium (Appelman & Sundar, 2016). Yet, while examining the believability of content is a valuable approach to understanding the influence of exercise-based social media, it

may not be entirely possible to tease apart the influence of content, authorship, and medium. In many cases participants reported that both the medium (a blog), and the author (credentials unlisted) contributed to perceptions of both belief and disbelief of the article content. For this population, these three elements may be inextricably intertwined, in particular given that participants expressed clear preferences for online media and social media in particular, when seeking exercise information. Source format, appealing content, and ease of access may be more influential aspects than believability of the message alone, when seeking exercise information for emerging adult women.

The current study contributes to the dearth of literature examining online exercise media believability, and provides some insight into factors that may contribute to exercise blog believability among emerging adult women who have attended university. In particular, this study contributes to the literature by exploring the unique influences that may affect readers, and gives meaning to previous experimental work aimed at understanding how content believability may be perceived by this population. Despite these strengths however, there are also limitations. The sample of women participating in this study were all regular exercisers, and were all educated at least to some extent, at the university level. This may have contributed to a more critical approach to the exercise blog article evaluation. Future studies may wish to explore the influence of these media on a more sedentary population, or among those with less comfort in the online environment. Nonetheless, these findings provide insight and perspective into how an exercise blog message may be perceived by some readers.

Although the current sample were all active emerging adult women participating regularly in sport and exercise, it is encouraging that the internet was considered a self-support tool when it came to continuing and diversifying exercise behaviours among this group. It is also

promising that all of the women expressed concerns for others, and the potential negative influence that these media may have on exercise thoughts and behaviours. This may contribute to greater social influence about online media amongst friends and family members, and may offset the potential harms of misinformation. However, it is still incumbent upon exercise professionals to ensure quality, evidence-informed content is available and in source formats that are most likely to reach this population.

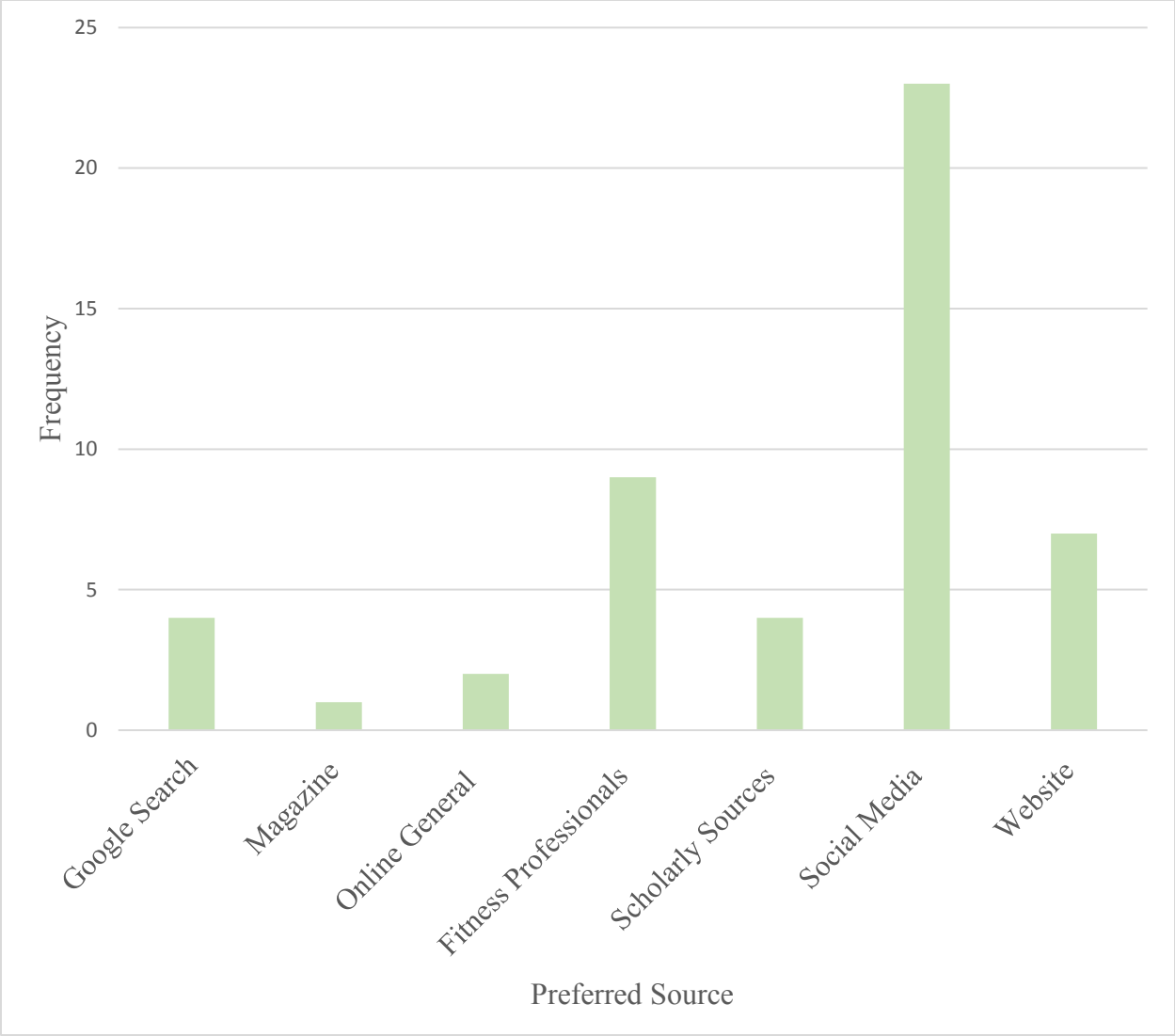


Figure 5.1. Preferred Sources of Exercise Information Seeking

Chapter 6: General Discussion

The purpose of this dissertation was to examine how exercise bloggers represent themselves and exercise information online, how young adult women perceive the believability of an exercise blog message, and whether believability predicted exercise-related intentions, and finally, to explore which aspects of an exercise blog message are perceived as believable and personally relevant. The first study, a quantitative content analysis provided the basis for exploring these media by assessing 194 of the most popular English-written fitness and exercise blogs in circulation at the time of data collection. Results of the content analysis revealed that nearly all blogs included features that are known to contribute to favourable evaluations of source and medium credibility such as multimediality, hypertextuality, and author expertise. This was assessed in order to control for peripheral cues that may distract readers from focusing on a blog article's content and perceptions of article believability. One blog article was then selected, which included these specific components in addition to also offering advice about exercise, some of which was factually incorrect. The second study then used the aforementioned blog article, as well as a factually corrected version of the content, for an experimental evaluation of blog article perceptions of believability. Findings from the experimental study showed that neither blog article, the factually correct version nor the original factually incorrect version, were automatically believed by readers though the factually correct version was disbelieved slightly more, when measured explicitly. Both blog articles however, were associated with positive automatic affective evaluations, and that explicitly measured affective evaluations contributed to exercise intentions regardless of group assignment. The third study again made use of the same original, factually incorrect blog article, and explored which components of the article were perceived as credible and believable for readers. Findings of this qualitative work suggest that

young women reading this blog article perceived certain aspects of the blog article as believable and reliable, while other aspects of the blog were not. Taken together, these three studies provide some perspective into whether or not popular fitness and exercise blog articles may be believed by readers, what factors may contribute to this believability, and how this may influence exercise intentions for this demographic.

Whereas previous research has often conflated perceptions of trust, believability, and reliability of a message source, medium, and content under the construct of credibility, a measure of believability focuses squarely on the content of a message (O'Cass & Griffin, 2006). Yet, it may not be possible to fully assess message believability with regard to online media, as the medium and source may also weigh heavily in the minds of readers. Results from the experimental study showed that participants in both groups evaluated the blog articles with general neutrality at the automatic level. Upon reflection, those reading the corrected version of the blog article believed the information somewhat less than those reading the original, factually incorrect article. Possible explanations for these findings may be gleaned from participant interviews in the qualitative study. Women reading the blog article reported finding some aspects of the content believable but called into question the medium and author. Specifically, participants reported that while aspects of the blog article appeared to offer rational, sound arguments, a blog article was an unreliable source of information in particular when it did not include evidence to support the claims. Participants in the qualitative study further pointed to a lack of author qualifications reported on the blog apart from a generic statement that the author was a personal trainer. Past work has noted that this may influence reader perceptions of online information (Metzger & Flanagin, 2015). While the blog article fairly represented the findings from the content analysis in which a majority of bloggers either presented similar ambiguous

qualifications or no qualifications at all, participants in the qualitative study associated this lack of transparency with questionable believability. This may have also been the case for experimental study participants who despite group assignment, did not report high believability for either blog article. This is important to the overall question of believability measurements, and may provide some perspective into future work in this domain. It is possible that while participants do indeed evaluate content believability, it is also likely that this is done in the context of the medium and source associated with the information (Metzger & Flanagin, 2015). Readers are possibly unaware that they are conflating these aspects of the message when encountering this information. Therefore while Appelman and Sundar (2016) have called for a separation of these constructs in evaluation, this may only be possible insofar as all three constructs (medium, source, and message) are evaluated separately while within the same study. In turn, this would allow for a more holistic, context-driven approach to understanding how messages are perceived by consumers.

Past work has suggested that heuristics may guide user evaluations of online content, which may have played a role in how participants perceived the blog article (Metzger & Flanagin, 2013; Sundar, 2008). While attempting to control for many secondary features often associated with credibility assessments such as author credentials and website layout, the selection of the specific blog article used in the experimental and qualitative studies may have inadvertently pushed participants to attend to those specific heuristic features. As Metzger and Flanagin (2015) note, individuals will exert more effort evaluating a source for factual reference and general credibility if the information is not for entertainment purposes. It is possible that this occurred in part as participants were asked to attend to the message, which was written in the tone of a factual, advice-based article. This heightened attention to the article may have alerted

participants to secondary features, given the knowledge focus of the article (Metzger & Flanagin, 2015). Specifically participants may have focused on heuristics such as the author's qualifications stated only as 'personal trainer', the two-year old date of publication which was clearly marked at the start of the article, or the conspicuous lack of commentary in the empty comments section. Indeed, participants in the qualitative study cited being unfamiliar with the blog author which may have then drawn scrutiny on other aspects of the article in the absence of an ability to rely on what Metzger and Flanagin (2013) termed the reputation heuristic. Further, previous work suggests that individuals knowledgeable on the subject matter, will make use of more evaluation cues including heuristics, in order to evaluate a message. It may be that for women in both the experimental and qualitative studies, prior knowledge about the topic of exercise may have contributed to more scrutiny of secondary features of the blog article. Work examining online media suggest that for consumer evaluations, "using peripheral cues is the rule of web use, not the exception" (Fogg et al., 2003 in Metzger & Flanagin, 2015, pp. 251). Yet again, this points to an interconnectivity between the source and the message for readers.

Previous research also suggests that heuristic devices may be used by content creators in the online environment (i.e., authors, publishers) in order to improve perceptions of general credibility and content believability (Appelman & Sundar, 2016; Dochterman & Stamp, 2010). This may be one way in which under and unqualified individuals improve favourable perceptions and impart trust with the public. Results from the content analysis suggest that those with no posted fitness or exercise qualifications were more likely to make use of heuristic devices on their blog posts, such as including video and images. This may be an attempt to appear more professional, and to keep up with current trends in the online environment where image-based platforms are the most popular form of social media (We Are Social, Hootsuite, et al., 2020).

Further, the use of video and images may circle back to arguments made by Hutson (2013), which suggest that individuals that look the part, are perceived as more knowledgeable in the exercise professions. Bloggers examined by the content analysis also broadly made use of generalized terms of expertise such as "I am a personal trainer" though few supported these claims with education or certification. This may have been an attempt to establish source credibility for readers, despite and in particular for bloggers that did not have qualifications posted on their blogs. Experiential expertise may be established by those who have lived experiences on a given topic, even in the absence of any official qualifications (Metzger & Flanagin, 2015). It is then at the discretion of the reader to evaluate this expertise. Consumers have reported that advice based on another individual's experience is considered reliable (Metzger et al., 2010). It is possible that for some readers, this claim of expertise was sufficient to determine that the author was a credible source, and therefore contributed to favourable evaluations of content believability. However, given that results from the experimental study reported neutral or slight disbelief of the message, it is also likely that this was a possible detractor for readers. Participants in the qualitative study did express that their lowered perceptions of believability were in part due to an absence of blogger qualifications. This is promising and suggests that there may be an element of media literacy which factored into article evaluations. It is important to note however, that nearly all participants in the qualitative study were educated in the health and exercise sciences, which may have resulted in a more critical evaluation of the blog article and all of its features and may not be as prevalent among a general public. This may also be a product of the sample demographics given that this age group, in both experimental and qualitative studies, are familiar with digital media and are considered largely

comfortable with navigating information in the online environment (Percheski & Hargittai, 2011; Vaterlaus et al., 2015).

As participants in the experimental study did not outright disbelieve the article, there may have been some aspects of the blog article that were perceived as believable to readers. Qualitative study findings suggest that participants effectively honed in on aspects of the blog article that were familiar such as having heard about the benefits of weight training for fat loss, or general familiarity with the jargon used by the author (e.g., basal metabolic rate, lean body mass). It is likely that participants in the experimental study also experienced some familiarity with the content presented in the blog article, which may have contributed to the general neutrality of responses. However, it may also be that this believability was limited due to the outcome expectations associated with the promoted exercise. Participants in the experimental study may not have believed that a 'toned, sexy, sculped physique' was personally achievable and therefore did not fully believe the information reported by the blog article. Previous studies have demonstrated that exercise media that overpromise results may limit exercise uptake and adherence (Dimmock et al., 2020). Findings from the qualitative study support this prospect, as noted by the theme 'sensationalized information'. Participants in the qualitative study commented that statements made by the article and others like it used familiar terms and jargon, but tend to claim grandiose rather than realistic results, which made the blog article content questionable. The original blog article was also heavily focused on appearance outcomes, promoting the uptake of an exercise protocol focused on weight training in lieu of/more so than cardiovascular training for the purposes of fat loss. This may have contributed to lowered exercise intentions for participants in the experimental study. Previous research suggests that exercise-promoting messages that are overly focused on appearance outcomes may act as a

barrier to exercise uptake (Vaterlaus et al., 2015). It is possible that for participants in both studies perceived the blog article as promoting unrealistic outcome expectations and therefore did not believe the content of the article and its promises, applied to them.

Information relevance may have also been a contributing element with regard to blog article believability. Participants in the studies ranged in age from 18-30 years, and may have found the content of the article not personally relevant thus contributing to neutral perceptions of believability in the experimental study. Both groups were tasked with reading a version of the blog article that highlighted the need for weight/resistance training exercise in order to delay the effects of age-onset muscle atrophy. However, the focus of this risk factor centered on age, and while the original, factually incorrect article erroneously claimed that age-onset muscle atrophy begins when women are in their 20's, both articles correctly detailed that this is a process commonly associated with being 45 years of age or older. Women in both groups of the experimental study may have felt that the content was not personally relevant at this point in their lives though it may be at a later point in their life course, resulting in neutral perceptions of believability. Qualitative interviews suggest that participants did not feel the information presented in the blog article was personally relevant, contributing to lowered evaluations of content believability. It may also be that the blog article promoted unhealthy behaviours, as noted by participants in the qualitative study. For example, the original blog article suggested "strive for a caloric deficit that helps your body make gains and progress without catabolizing your hard earned lean tissue" (Arruda, 2017, para. 4). Given the promotion of a caloric deficit, it may be that participants were disinterested in potentially unhealthy eating habits and thus, did not deem the information relevant to their own interests and goals. Qualitative results did support this possibility as participants reported avoiding sources that promoted unhealthy behaviours.

This was also the focus of findings in the qualitative study represented by the theme ‘projecting believability’ in which participants expressed deep concern for the health of other women consuming and potentially acting upon the information presented in the original blog article. Further, women in the qualitative study remarked that the content of the blog article targeted common insecurities such as carrying unwanted body fat, or a desire to achieve a ‘toned’ look. Participants claimed that this relevance may relate to other women, who may find themselves prone to content promoting such advice, though participants again did not feel this was personally relevant for themselves. It may be that if exercise-promoting messages are to be believed, the focus of the information must hinge on factors that are relevant to the goals, interests, and personal relevance of a specific demographic.

Personally relevant messages may also come in the form of content that upholds previously held beliefs (Metzger et al., 2010). This confirmation bias may have factored heavily into perceptions of believability in both experimental and qualitative studies. Individuals are known to seek out information that conforms to previously held beliefs about a topic while systematically avoiding information that contradicts it (Kim & Dennis, 2019). The theme ‘selective believability’ in the qualitative study exemplifies participants’ willingness to endorse as believable that which conformed to prior beliefs while rejecting other aspects of the article that may be unfamiliar or contradictory. Generally, participants in the qualitative study reported that they were more inclined to source exercise information online that suited their personal interests and goals, while meeting outcome expectations based on past knowledge or experience. These women further expressed support for the content in the original blog article that did conform to what they already felt to be correct information. This may have also been expressed in the experimental study whereby participants were neutral with regard to believability of the

content both automatically and propositionally, while those reading the factually corrected version of the blog article reported lowered content believability in particular upon reflection, as measured explicitly. It may be that the expression of lowered believability is due in part to a lack of confirmation bias as the factually corrected article contradicted previously held beliefs about the effects of resistance training exercise for women. This is problematic for exercise-promoters who attempt to disseminate evidence-based information that is novel or contradictory to prior beliefs. Research has demonstrated that online information seekers will stop their search upon encountering belief-confirming content (Metzger et al., 2010). Still other research has shown that online content which supports a confirmation bias is more likely to be read and shared among peers (Kim & Dennis, 2019). It is then more likely that out-dated or incorrect information will be shared when it supports banal content such as erroneous exercise myths, reinforcing information that may be harmful or at the very least, unhelpful. This may further the amount of misinformation circulating online and recent work has found that falsified content is often shared and disseminated more frequently via social media than evidence-informed, correct content (Vosoughi et al., 2018). This may be a product of confirmation bias such that individuals share what they believe to be correct, as supported by others in their social circles who also believe similar information. Work by Metzger and Flanagin (2013), among others, suggest that indeed there is a bandwagon effect whereby new information is trusted when it is accepted and trusted by others. This poses a challenge to evidence-based exercise promoters when attempting to break through the plethora of information online, and provide novel evidence-based information that will be believed, dispelling potentially erroneous, long-held myths.

Although blog article believability was the primary focus of the experimental and qualitative studies, it was not an influential contributor to exercise intentions. Rather, explicitly

measured affective evaluations did predict exercise intentions. It may be however, that this positive evaluation about exercise was already established prior to study participation, with participants in both experimental and qualitative studies reporting regular engagement in exercise. These women may therefore have already intended to continue with exercise, and were thus inclined to report favourable affect towards exercise. Prior research suggests that evaluations are likely to be based at least in part, on memory and experience (Albarracin & Shavitt, 2018). Further, evaluations may be stable in particular for instances in which individuals can rationalize and agree with newly encountered information (Albarracin & Shavitt, 2018). Notably, it was consciously reasoned affect that predicted exercise intentions in the experimental study. It may be that while participants did not report believing the blog articles, prior held, stable affective evaluations about exercise generally, were salient enough for these women that this contributed to exercise intentions even in the absence of content believability. Qualitative study findings also suggest that participants were exercise-intenders, as evidenced by the selective criteria used to source and act upon exercise content found online. Specifically, participants in the qualitative study noted preferences not only for source, but medium, format, and content. This is good news and suggests that exercise misinformation may not erode positive affect for already-active individuals. However, it remains unclear as to how these media may affect novice exercisers, and whether this effect of affect applies to those who may not yet be regularly active. Nonetheless, exercise promoters may be able to harness these findings in order to create appealing content for the online environment, targeting positive affect for readers in an effort to elicit exercise intentions.

Practical Implications

The overabundance of information may be a limiting factor for readers in terms of ability to fully process all of the content that they encounter (Schmitt et al., 2018). This has practical implications for qualified exercise professionals attempting to be heard and gain traction for reliable, evidence-based content in a world where so many messages are vying for attention. One way in which this may be overcome is for individuals to become more literate with regard to online media. Information overload may be the result of a vast array of information from a variety of sources (Schmitt et al., 2018). Individuals who lack the confidence to effectively source relevant, reliable information may experience greater information overload than those who do possess such confidence (Schmitt et al., 2018). By this avenue, it is possible to continue to place the burden of proof on the consumer, encouraging individuals to verify content through triangulation of authority, accuracy, and currency of publication, as recommended by Metzger and Flanagin (2013). However, given the overabundance of information online, it is unlikely that those seeking exercise information will exert the cognitive and time-consuming effort to do so (Metzger and Flanagin 2013).

The findings of this dissertation may provide an opportunity for qualified exercise promoters to make use of social media influencers in an effort to promote evidence-based information. To do so, qualified exercise professionals may encourage others with the education and media literacy to assess key features of online exercise information to share and promote reliable content via online platforms. As evidenced in the qualitative study, lack of evidence, promotion of unhealthy behaviours, and unrealistic portrayals of exercise outcomes were the centre of the subtheme ‘avoiding sources’. These women noted specific features of the blog article that contributed to lowered perceptions of believability of the blog article. Engaging individuals with the skills and knowledge to examine and disseminate evidence-based

information, and in ways that are appealing to consumers, may increase the potential for reach and acceptance of reliable, truthful exercise information across a broader audience. This reliance on the endorsement heuristic (Metzger & Flanagin, 2013) may also create an opportunity to stifle unqualified exercise bloggers, as consumers are more likely to trust information that is endorsed by those they already know and trust.

The issue of inaccurate and incomplete exercise information found online may also look to public policy for some resolution. Health professionals such as medical doctors, nurses, and physiotherapists are held to standardized expectations with regard to information and advice sharing. For example, physicians are required to "provide opinions consistent with the current and widely accepted views of the profession when interpreting scientific knowledge to the public; clearly indicate when you present an opinion that is contrary to the accepted views of the profession" (pp. 7, CMA, 2018). There is however, no formalized code of ethical conduct in the exercise disciplines, leaving opportunity for anyone to claim expertise and to disseminate exercise information with little repercussion. Exercise professionals may do well to establish clear and formal guidelines around which individuals can appropriately disseminate exercise advice including in the online environment. Further, with many governing bodies in the exercise disciplines, ranging from weekend courses that result in exercise certifications (e.g., Certified Personal Trainer, Group Fitness Instructor) to clinical designations based on completed degrees in kinesiology/exercise physiology (e.g., Clinical Exercise Physiologist), it may be prudent for exercise bodies to designate more consistent, standardized criteria that establish educational and competency-based best practices for all exercise professionals. It is therefore incumbent upon exercise professionals to uphold the integrity of their profession, and to ensure that misinformation is not readily disseminated.

Strengths

Much of the current literature examining the influence of online exercise messaging has focused on the self-comparison and body image outcomes of viewing exercise social media (c.f., Prichard et al., 2018, 2020). There is limited work examining reader perceptions of content believability related to exercise messaging and of those that have, there are no known studies examining exercise blogs specifically. Given the vast reach of such sources, these studies add to work in exercise messaging, by examining an unexpectedly popular source of exercise information: exercise blogs. Strengths of this dissertation work include three interconnected studies each uniquely examining what type of exercise information is shared using this social media platform, who the content creators appear to be, and how this type of exercise information may be perceived by readers. Further, given the extensive work in communication research examining credibility as a singular construct, this dissertation work contributes to a more robust understanding of the various aspects of the credibility construct, and how readers may conflate the message, source, and medium giving support for previous work advocating for a separation of each aspect of credibility when evaluating reader perceptions. The use of a propositional duality model further strengthens this work, by assessing both automatic and reflective believability of the blog information, allowing for a dual-lens perspective on how this media may be perceived. Finally, while there is a dearth of literature examining reader perceptions of exercise message believability, the current studies both offer insight into whether or not some online exercise media may be believed by readers, while results from the qualitative study provide context and insight into the underlying conditions that may contribute to or detract from such evaluations.

Limitations

Alongside the aforementioned strengths, there are also some limitations to this dissertation work. The social media landscape is transient and ever-evolving and while the findings from these studies may provide some insight into how exercise blogs might be perceived by readers, it is likely that readers' preferences for source, medium, and content are also ever-evolving. For example, since the first study began, new social media platforms have exploded in popularity while others have waned, and still other commonly used platforms have been called into question for the ways in which information is disseminated. This limits the findings from this collective work to the temporal frame in which the data were collected, making replicability difficult. While the novelty of examining the believability of exercise blogs remains a strength, the current studies also provide limited generalizability given the specific sample demographics.

In the current age of mass information and access to multiple information sources at light speed, it is possible for anyone to create and disseminate information online. Yet this may also provide an avenue for misinformation to circulate, competing with factual, reliable, and evidence-based content. The current climate of information dissemination in particular in recent years, has called into question the underlying motivations of communicators, the veracity of widely available content, and even the operational demands of popular online media platforms (e.g., Facebook, fake news). Research in the field of communication has recognized the vast information landscape found online, and the potential impact this may have on consumers. Findings from this dissertation work suggest that readers employ multiple criteria when evaluating a message, which is likely evaluated in the presence of the source and medium. It may not be sufficient then, for qualified exercise promoters to engage the public in evidence-informed exercise information. Rather, it may be necessary for exercise messages to be disseminated using platforms that are familiar, popular, and aesthetically pleasant, while also including evidence to

support any claims made. Further, if exercise-promoting messages are to be believed, it may be necessary for qualified exercise promoters to remain as transparent as possible with regard to qualifications and experience. While these aspects of a an exercise message may appear to address popular, commercial approaches to reaching broad audiences, it is incumbent upon qualified exercise professionals to recognize that even evidence-informed content is in competition with exercise-promoting messages that may not necessarily have the best interests of readers at heart. Therefore, if an exercise message is to be believed, it may be necessary now more than ever, for qualified professionals to address the desired interests, outcomes, formats, sources, and preferences of those they wish to inspire.

References

Ajzen, I. (1991). The theory of planned behavior. *Orgnizational Behavior and Human Decision Processes*, *50*, 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2006). *Constructing a TPB Questionnaire: Conceptual and Methodological considerations*. https://doi.org/10.1016/0749-5978(91)90020-T

Albarracin, D., & Shavitt, S. (2018). Attitudes and Attitude Change. *Annual Review of Psychology*, *62*, 391–417. https://doi.org/10.1146/annurev.psych.121208.131609

Allen, C. A. (2014). Using content analysis to profile the blogosphere. *Academy of Marketing Studies*, *18*(2), 181–192.

American College of Sports Medicine. (2019). *Get Certified*. https://www.acsm.org/get-stay-certified/get-certified

Appelman, A., & Sundar, S. S. (2016). Measuring message credibility. *Journalism & Mass Communication Quarterly*, *93*(1), 59–79. https://doi.org/10.1177/1077699015606057

Atkinson, N. L., Saperstein, S. L., & Pleis, J. (2009). Using the internet for health-related activities: Findings from a national probability sample. *Journal of Medical Internet Research*, *11*(1), 1–11. https://doi.org/10.2196/jmir.1035

Basch, C. H., MacLean, S. A., Romero, R. A., & Ethan, D. (2018). Health information seeking behavior among college atudents. *Journal of Community Health*, *43*(6), 1094–1099. https://doi.org/10.1007/s10900-018-0526-9

Bazzini, D. G., Pepper, A., Swofford, R., & Cochran, K. (2015). How healthy are health magazines? A comparative content analysis of cover captions and images of women's and

men's health magazine. *Sex Roles*, *72*(5–6), 198–210. https://doi.org/10.1007/s11199-015-0456-2

Beares, D. (2017). *How to regain INSPIRATION when you feel lost*. 39 Min Workout. www.39minworkout.com/how-to-regain-inspriation-when-you-feel-lost/

Beltramini, R. E. (1988). Perceived believability of warning label information presented in cigarette advertising. *Journal of Advertising*, *17*(1), 26–32. https://doi.org/10.1080/00913367.1988.10673110

Berry, T. R. (2016). Changes in implicit and explicit exercise-related attitudes after reading targeted exercise-related information. *Psychology of Sport and Exercise*, *22*, 273–278. https://doi.org/10.1016/j.psychsport.2015.09.001

Berry, T. R., Jones, K. E., Courneya, K. S., McGannon, K. R., Norris, C. M., Rodgers, W. M., & Spence, J. C. (2018). Believability of messages about preventing breast cancer and heart disease through physical activity. *BMC Psychology*, *6*(1), 1–9. https://doi.org/10.1186/s40359-018-0213-8

Berry, T. R., Jones, K. E., McLeod, N. C., & Spence, J. C. (2011). The relationship between implicit and explicit believability of exercise-related messages and intentions. *Health Psychology*, *30*(6), 746–752. https://doi.org/10.1037/a0025082

Berry, T. R., McLeod, N. C., Pankratow, M., & Walker, J. (2013). Effects of Biggest Loser exercise depictions on exercise-related attitudes. *American Journal of Health Behavior*, *37*(1), 96–103. https://doi.org/10.5993/AJHB.37.1.11

Berry, T. R., & Shields, C. (2014). Source attribution and credibility of health and appearance

exercise advertisements: Relationship with implicit and explicit attitudes and intentions. *Journal of Health Psychology*, *19*, 242–252. https://doi.org/10.1177/1359105312468190

Boepple, L., Ata, R. N., Rum, R., & Thompson, J. K. (2016). Strong is the new skinny: A content analysis of fitspiration websites. *Body Image*, *17*, 132–135. https://doi.org/10.1016/j.bodyim.2016.03.001

Boepple, L., & Thompson, J. K. (2014). A content analysis of healthy living blogs: Evidence of content thematically consistent with dysfunctional eating attitudes and behaviors. *International Journal of Eating Disorders*, *47*, 362–367. https://doi.org/10.1002/eat.22244

Borah, P., & Xiao, X. (2018). The importance of 'likes': The interplay of message framing, source, and social endorsement on credibility perceptions of health information on Facebook. *Journal of Health Communication*, *23*(4), 399–411. https://doi.org/10.1080/10810730.2018.1455770

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Calitri, R., Lowe, R., Eves, F. F., & Bennett, P. (2009). Associations between visual attention, implicit and explicit attitude and behaviour for physical activity. *Psychology & Health*, *24*(9), 1105–1123. https://doi.org/10.1080/08870440802245306

Canadian Society for Exercise Physiology. (2019). *Choose CSEP for your certification*. Canadian Society for Exercise Physiology. https://www.csep.ca/en/get-certified/choose-csep-certification

CanFitPro. (2019). *Get certified*. CanFitPro. https://canfitpro.com/certification/

Carey, T., & Hicks-Rocha, A. (2017). *Our Story*. Black Girls Run. https://blackgirlsrun.com/pages/our-story

Carmy. (2017). *Race Report: Niagara Ragnar Relay May 19-21*. Carmy Run Eat Travel. www.carmyy.com/niagara-ragnar-relay-may-19-21/

Chicrunner. (2017). *Introducing our newest family member*. Chic Runner. http://chicrunner.com/2017/05/introducing-our-newest-family-member/

Chung, C. J., Nam, Y., & Stefanone, M. A. (2012). Exploring online news credibility: The relative influence of traditional and technological factors. *Journal of Computer-Mediated Communication*, *17*(2), 171–186. https://doi.org/10.1111/j.1083-6101.2011.01565.x

Clement, J. (2019). *Average number of social media accounts per internet user from 2013 to 2018*.

Cohall, A. T., Nye, A., Moon-Howard, J., Kukafka, R., Dye, B., Vaughan, R. D., & Northridge, M. E. (2011). Computer use, internet access, and online health searching among Harlem adults. *American Journal of Health Promotion*, *25*(5), 325–333. https://doi.org/10.4278/ajhp.090325-QUAN-121

Concannon, A. (2016). *No Title*. Achieve with Athena. https://www.achievewithathena.com/about/

Conner, M., Rhodes, R. E., Morris, B., McEachan, R., & Lawton, R. (2011). Changing exercise through targeting affective or cognitive attitudes. *Psychology & Health*, *26*(2), 133–149. https://doi.org/10.1080/08870446.2011.531570

Conroy, D. E., & Berry, T. R. (2017). Automatic affective evaluations of physical activity.

Exercise and Sport Sciences Reviews, *45*(4), 230–237. https://doi.org/10.1249/JES.0000000000000120

Conroy, D. E., Hyde, A. L., Doerksen, S. E., & Ribeiro, N. F. (2010). Implicit attitudes and explicit motivation prospectively predict physical activity. *Annals of Behavioral Medicine*, *39*(2), 112–118. https://doi.org/10.1007/s12160-010-9161-0

Cosenza, T. R., Soloman, M. R., & Kwon, W.-S. (2015). Credibility in the blogosphere: A study of measurement and influence of wine blogs as an information source. *Journal of Consumer Behaviour*, *14*, 71–91. https://doi.org/10.1002/cb.1496

Courneya, K. S., Conner, M., & Rhodes, R. E. (2006). Effects of different measurement scales on the variability and predictive validity of the "two-component" model of the theory of planned behavior in the exercise domain. *Psychology and Health*, *21*(5), 557–570. https://doi.org/10.1080/14768320500422857

Crestodina, A. (2018). *Blogging statistics and trends: The 2018 survey of 1000+ bloggers*. Orbit Media. https://www.orbitmedia.com/blog/blogging-statistics/

Creswell, J. W. (2013). *Qualitative Inquiry and Research Design Choosing Among Five Approaches*. Sage Publications.

Cross, P. (2017). *Skin Emergency? Time for Some Vitamin C*. https://poppycross.co.uk/skin-emergency-try-the-vitamin-c-peel/

Cullen, K. W., Koehly, L. M., Anderson, C., Baranowski, T., Prokhorov, A., Basen-engquist, K., Wetter, D., & Hergenroeder, A. (1999). Gender differences in chronic disease risk behaviors through the transition out of high school. *American Journal of Preventive*

Medicine, *17*(1), 1–7.

De Lyon, A. T. C., Neville, R. D., & Armour, K. M. (2017). The role of fitness professionals in public health: A review of the literature. *Quest*, *69*(3), 313–330. https://doi.org/10.1080/00336297.2016.1224193

Deighton-Smith, N., & Bell, B. T. (2017). Objectifying fitness: A content and thematic analysis of #fitspiration images on social media. *Psychology of Popular Media Culture*, *7*(4), 467–483. https://doi.org/10.1037/ppm0000143

Del Vicario, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., Caldarelli, G., Stanley, H. E., & Quattrociocchi, W. (2016). The spreading of misinformation online. *Proceedings of the National Academy of Sciences*, *113*(3), 554–559. https://doi.org/10.1073/pnas.1517441113

Dimmock, J., Simich, D., Budden, T., Podlog, L., Beauchamp, M., & Jackson, B. (2020). Not All promotion is good promotion: The pitfalls of overexaggerated claims and controlling language in exercise messaging. *Journal of Sport and Exercise Psychology*, *42*, 1–14. https://doi.org/10.1123/jsep.2019-0193

Divine, A., Watson, P. M., Baker, S., & Hall, C. R. (2019). Facebook, relatedness and exercise motivation in university students: A mixed methods investigation. *Computers in Human Behavior*, *91*(August 2018), 138–150. https://doi.org/10.1016/j.chb.2018.09.037

Dochterman, M. A., & Stamp, G. H. (2010). Part 1: The determination of web credibility: A thematic analysis of web user's judgments. *Qualitative Research Reports in Communication*, *11*(1), 37–43. https://doi.org/10.1080/17459430903514791

Dunlop, K. (2017). *The Best Snacks to Travel With*. Love Sweat Fitness.

https://www.lovesweatfitness.com/7214-2/

Editor. (2017). *Tips for a better sleep*. World Health Calgary. https://calgary.worldhealth.ca/?s=tips+for+a+better+sleep

Ellsberg, D. (1961). Risk, ambiguity, and the savage Axioms. *Quarterly Journal of Economics*, *75*(4), 643–669.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x

Eppler, M. J., & Mengis, J. (2004). The concept of information overload: A review of literature from organization science, accounting, marketing, MIS, and related disciplines. *Information Society*, *20*(5), 325–344. https://doi.org/10.1080/01972240490507974

Eysenbach, G. (2007). From intermediation to disintermediation and apomediation: New models for consumers to access and assess the credibility of health information in the age of web2.0. *Studies in Health Technology and Informatics*, *129*, 162–166.

Farrington, R. (2015). *About*. Live Work Train. http://www.liveworktrain.com/about/

Fit4Mom. (2017). *Our founder*. Fit4Mom. https://fit4mom.com/our-founder

Fitness, D. (2017). *The Bridal Body Workout Plan*. DW Fitness. www.dwfitnessclubs.com/blog/2017/bridal=body-workout-plan/

Flanagin, A. J., & Metzger, M. J. (2007). The role of site features, user attributes, and information verification behaviors on the perceived credibility of web-based information. *New Media & Society*, *9*(2), 319–342. https://doi.org/10.1177/1461444807075015

Flynn, P. (2017). *Listen Jagweed, Here's How to Really Get in Shape*. Chronicles of Strength.

www.chroniclesofstrength.com/listen-jagweed-heres-how-to-really-get-in-shape/

Fog, K., Budtz, C., Munch, P., & Blanchette, S. (2010). *Storytelling* (2nd ed.). Springer.

Galov, N. (2019). *How many blogs are there?* Hosting Tribunal. https://hostingtribunal.com/blog/how-many-blogs/

Garcia, M. (2017). *Fit Beauties*. www.fitbeauties.ca/sample-page/about-bluntbeauty/

Gawronski, B. (2009). Ten frequently asked questions about implicit measures and their frequently supposed, but not entirely correct answers. *Canadian Psychology*, *50*(3), 141–150. https://doi.org/10.1037/a0013848

Gawronski, B., & Bodenhausen, G. V. (2011). The associative-propositional evaluation model. Theory, evidence, and open questions. In *Advances in Experimental Social Psychology* (1st ed., Vol. 44). Elsevier Inc. https://doi.org/10.1016/B978-0-12-385522-0.00002-0

Gawronski, B., Brannon, S. M., & Bodenhausen, G. V. (2019). The Associative - Propositional Duality in the Representation, Formation, and Expression of Attitudes. In B. Deutsch, B. Gawronski, & W. Hoffmann (Eds.), *Reflective and impulsive determinants of human behavior* (pp. 103–118). Psychology Press.

Gawronski, B., & Brannon, S. M. (2020). Attitudes and the implicit-explicit dualism (Albarracin, D., & Johnson, B. T., Eds*)*. In The Handbook of Attitudes Volume 1: Basic Principles. https://doi.org/10.4324/9781315178103-4

Gawronski, B., & Creighton, L. A. (2013). Dual-process theories. *The Oxford Handbook of Social Cognition*, 282–312. https://doi.org/10.1017/S0140525X03340130

Godin, G. (2011). The Godin-Shephard Leisure-Time Physical Activity Questionnaire. *Health &*

Fitness Journal of Canada, *4*(1), 18–22.

Grunwell, R. (2017). *Marathon Run Rituals - To Give You the "Edge."* Inspired Health. www.inspiredhealth.co.nz/6497-2/

Gym Flow 100. (2017). *8 fitness tips for a killer summer body*. Gym Flow 100. https://gymflow100.com/8-fitness-tips-killer-summer-body/

Han, K. (2018). How do you perceive this author? Understanding and modeling authors' communication quality in social media. *PLoS ONE*, *13*(2), 1–26. https://doi.org/10.1371/journal.pone.0192061

Han, P. K. J., Moser, R. P., & Klein, W. M. P. (2007). Perceived ambiguity about cancer prevention recommendations: Associations with cancer-related perceptions and behaviours in a US population survey. *Health Expectations*, *10*(4), 321–336. https://doi.org/10.1111/j.1369-7625.2007.00456.x

Harada, K., Shibata, A., Lee, E., Oka, K., & Nakamura, Y. (2016). Sources of strength-training information and strength-training behavior among Japanese older adults. *Health Promotion International*, *31*(1), 5–12. https://doi.org/10.1093/heapro/dau052

Harper, R. (2014). Development of a health literacy assessment for young adult college students: A pilot study. *Journal of American College Health*, *62*(2), 125–134. https://doi.org/10.1080/07448481.2013.865625

Hindman, M., Tsioutsiouliklis, K., & Johnson, J. A. (2003). "Googlearchy": How a few heavily-linked sites dominate politics on the web. *Presented at Annual Meeting of the Midwest Political Science Association*.

Howell, L. (Ed. . (2013). Global Risks Report 2013 Eighth Edition. In *World Economic Forum*. https://doi.org/http://reports.weforum.org/global-risks-2013/risk-case-1/digital-wildfires-in-a-hyperconnected-world/

Huberty, J., Dinkel, D., Beets, M. W., & Coleman, J. (2013). Describing the use of the internet for health, physical activity, and nutrition information in pregnant women. *Maternal and Child Health Journal*, *17*(8), 1363–1372. https://doi.org/10.1007/s10995-012-1160-2

Hutson, D. J. (2013). "Your body is your business card": Bodily capital and health authority in the fitness industry. *Social Science and Medicine*, *90*, 63–71. https://doi.org/10.1016/j.socscimed.2013.05.003

Jake-Schoffman, D. E., Wilcox, S., Kaczynski, A. T., Turner-Mcgrievy, G., Friedman, D. B., & West, D. S. (2018). E-Media Use and Preferences for Physical Activity and Public Health Information: Results of a Web-Based Survey. *Journal of Public Health Management and Practice*, *24*(4), 385–391. https://doi.org/10.1097/PHH.0000000000000638

Jiang, S., & Street, R. L. (2017). Pathway Linking Internet Health Information Seeking to Better Health: A Moderated Mediation Study. *Health Communication*, *32*(8), 1024–1031. https://doi.org/10.1080/10410236.2016.1196514

Johnson, T. J., & Kaye, B. K. (2009). In blog we trust? Deciphering credibility of components of the internet among politically interested internet users. *Computers in Human Behavior*, *25*(1), 175–182. https://doi.org/10.1016/j.chb.2008.08.004

Johnson, T. J., & Kaye, B. K. (2014). Credibility of social network sites for political information among politically interested internet users. *Journal of Computer-Mediated Communication*, *19*(4), 957–974. https://doi.org/10.1111/jcc4.12084

Johnson, T. J., & Kaye, B. K. (2015). Reasons to believe: Influence of credibility on motivations for using social networks. *Computers in Human Behavior*, *50*, 544–555. https://doi.org/10.1016/j.chb.2015.04.002

Johnston, C., & Davis, W. E. (2019). Motivating exercise through social media: Is a picture always worth a thousand words? *Psychology of Sport and Exercise*, *41*(February 2018), 119–126. https://doi.org/10.1016/j.psychsport.2018.12.012

Juli. (2015). *About Me - Juli*. PaleOMG. www.paleomg.com/about-me/

Jung, E. H., Walsh-Childers, K., & Kim, H. S. (2016). Factors influencing the perceived credibility of diet-nutrition information web sites. *Computers in Human Behavior*, *58*, 37–47. https://doi.org/10.1016/j.chb.2015.11.044

Kaye, B. K., & Johnson, T. J. (2011). Hot diggity blog: A cluster analysis examining motivations and other factors for why people judge different types of blogs as credible. *Mass Communication and Society*, *14*(2), 236–263. https://doi.org/10.1080/15205431003687280

Kayla. (2017). *About Me*. Kayla in the City! www.kaylainthecity.com/about

Kim, A., & Dennis, A. R. (2019). Says who? The effects of presentation format and source rating on fake news in social media. *MIS Quarterly: Management Information Systems*, *43*(3), 1025–1039. https://doi.org/10.25300/MISQ/2019/15188

Lagoe, C., & Atkin, D. (2015). Health anxiety in the digital age: An exploration of psychological determinants of online health information seeking. *Computers in Human Behavior*, *52*, 484–491. https://doi.org/10.1016/j.chb.2015.06.003

Langley, T. (2017). *The Fit Bits*. The Fit Bits. http://www.thefitbits.com/p/home.html

Latkin, C. A., & Knowlton, A. R. (2015). Social Network Assessments and Interventions for Health Behavior Change: A Critical Review. *Behavioral Medicine*, *41*(3), 90–97. https://doi.org/10.1080/08964289.2015.1034645

Liu, S., & Young, S. D. (2018). A survey of social media data analysis for physical activity surveillance. *Journal of Forensic and Legal Medicine*, *57*, 33–36. https://doi.org/10.1016/j.jflm.2016.10.019

Marton, C. (2015). Understanding the health information needs of British internet users seeking health information online and their perceptions of the quality of the internet as a source of health information. *Journal of Hospital Librarianship*, *15*(2), 175–188. https://doi.org/10.1080/15323269.2015.1015092

Mayan, M. J. (2016). *Essentials of Qualitative Inquiry*. Routledge.

McGloin, R., Richards, K., & Embacher, K. (2016). Examining the potential gender gap in online health information-seeking behaviors among digital natives. *Communication Research Reports*, *33*(4), 370–375. https://doi.org/10.1080/08824096.2016.1224169

Medlock, S., Eslami, S., Askari, M., Arts, D. L., Sent, D., de Rooij, Sophia, E., & Abu-Hanna, A. (2015). Health information-Seeking behavior of seniors who use the Internet: A survey. *Journal of Medical Internet Research*, *17*(1). https://doi.org/10.2196/jmir.3749

Metzger, Miriam, J., & Flanagin, Andrew, J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, *59*, 210–220. https://doi.org/10.1016/j.pragma.2013.07.012

Metzger, M., & Flanagin, A. (2015). Psychological approaches to credibility assessment online.

In S. S. Sundar (Ed.), *The Handbook of the Psychology of Communication Technology* (pp. 445–466). John Wiley and Sons, Inc. https://doi.org/10.1002/9781118426456.ch20

Metzger, M. J., Flanagin, A. J., & Medders, R. B. (2010). Social and heuristic approaches to credibility evaluation online. *Journal of Communication*, *60*(3), 413–439. https://doi.org/10.1111/j.1460-2466.2010.01488.x

Morocco, J. (2017). *Weight Loss vs. Fat Loss*. https://www.jaimemorocco.com/2017/03/30/weight-loss-vs-fat-loss/

Mulgrew, K. E., McCulloch, K., Farren, E., Prichard, I., & Lim, M. S. C. (2018). This girl can #jointhemovement: Effectiveness of physical functionality-focused campaigns for women's body satisfaction and exercise intent. *Body Image*, *24*, 26–35. https://doi.org/10.1016/j.bodyim.2017.11.007

Murphy, L. (2017). *The Wonderful Little Things That Help Run Our World*. Lottie Murphy. www.lottiemurphy.com/wonderful-little-things-help-run-world/

Neubaum, G., & Krämer, N. C. (2014). Let's blog about health! Exploring the persuasiveness of a Personal HIV blog compared to an institutional HIV website. *Health Communication*, *30*(9), 872–883. https://doi.org/10.1080/10410236.2013.856742

Nosek, B. A., & Banaji, M. R. (2001). Associat Ion Task the Go / No-Go Association Task. *Social Cognition*, *19*(6), 625–664. https://doi.org/10.1521/soco.19.6.625.20886

O'Cass, A., & Griffin, D. (2006). Antecedents and Consequences of Social Issue Advertising Believability. *Journal of Nonprofit & Public Sector Marketing*, *15*(1/2), 87–104. https://doi.org/10.1300/J054v15n01_05

Ori, E.M., Berry, T.R., Yun, L. (in press). The believability of exercise blogs among young adults. *Journal of Sport & Exercise Psychology*.

Ori, E.M., & Berry, T. R. (2020). Physical activity information seeking among emerging adults attending university. *Journal of American College Health*. https://doi.org/10.1080/07448481.2020.1740230

Pellegrino, C. (2017). *About Me Chiara Pellegrino*. 4Fitnessake. http://4fitnessake.co.uk/theblog/

Percheski, C., & Hargittai, E. (2011). Health information-seeking in the digital age. *Journal of American College Health*, *59*(5), 37–41. https://doi.org/10.1080/07448481.2013.820731

Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon*, *9*(5).

Price, L. (2016). *About*. FaFitSake. www.fafitsake.com/fitness-blog-about/

Prichard, I., Kavanagh, E., Mulgrew, K. E., Lim, M. S. C., & Tiggemann, M. (2020). The effect of Instagram #fitspiration images on young women's mood, body image, and exercise behaviour. *Body Image*, *33*, 1–6. https://doi.org/10.1016/j.bodyim.2020.02.002

Prichard, I., McLachlan, A. C., Lavis, T., & Tiggemann, M. (2018). The impact of different forms of #fitspiration imagery on body image, mood, and self-objectification among young women. *Sex Roles*, *78*(11–12), 789–798. https://doi.org/10.1007/s11199-017-0830-3

Pritchard, E. (2019). Train Smart: This is the best cardio for weight loss aka fat loss. *Women's Health*. https://www.womenshealthmag.com/uk/fitness/a707685/best-cardio-for-weight-loss/

Raggatt, M., Wright, C. J. C., Carrotte, E., Jenkinson, R., Mulgrew, K., Prichard, I., & Lim, M.

S. C. (2018). “I aspire to look and feel healthy like the posts convey”:Engagement with fitness inspiration on social media and perceptions of its influence on health and wellbeing. *BMC Public Health*, *18*(1), 1–12. https://doi.org/10.1186/s12889-018-5930-7

Rhodes, R. E., Janssen, I., Bredin, S. S. D., Warburton, D. E. R., & Bauman, A. (2017). Physical activity: Health impact, prevalence, correlates and interventions. *Psychology & Health*, *32*(8), 942–975. https://doi.org/10.1080/08870446.2017.1325486

Rhodes, R. E., & Kates, A. (2015). Can the Affective Response to Exercise Predict Future Motives and Physical Activity Behavior? A Systematic Review of Published Evidence. *Annals of Behavioral Medicine*, *49*(5), 715–731. https://doi.org/10.1007/s12160-015-9704-5

Rhodes, R. E., & Rebar, A. L. (2017). Conceptualizing and Defining the Intention Construct for Future Physical Activity Research. *Exercise and Sport Sciences Reviews*, *45*(4), 209–216. https://doi.org/10.1249/JES.0000000000000127

Richards, L., & Morse, J. M. (2007). *User’s Guide to Qualitative Methods* (2nd ed.). Sage Publications.

Riffe, D., Lacy, S., & Fico, F. G. (2008). *Analyzing Media Messages Using Quantiative Content Analysis in Research* (2nd Editio). Routledge.

Rines, D. (2017). *Tattoo Artist’s Hands Inked in Creativity*. Reebok Fitness. www.reebok.com/international/Blog2017-06/Tattoo-Artists-Hands-Inked-in-Creativity/

Robinson, L., Prichard, I., Nikolaidis, A., Drummond, C., Drummond, M., & Tiggemann, M. (2017). Idealised media images: The effect of fitspiration imagery on body satisfaction and exercise behaviour. *Body Image*, *22*, 65–71. https://doi.org/10.1016/j.bodyim.2017.06.001

Ross, J. (2017). *Genetics or lifestyle: which matters more for men's health?* ACE Fitness. www.acefitness.org/blog/6429/genetics-or-lifestyle-which-matters-more-for-mens-health

Ruper, S. (2017). *Why you should take digestive enzymes*. Paleo for Women. www.paleoforwomen.com/take-digestive-enzymes/

Sandelowski, M. (2000). Focus on research method: Whatever happend to Qualitative Description. *Research in Nursing & Health*, *23*, 334–340. https://doi.org/10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G

Sandelowski, M. (2010). What's in a name? Qualitative description revisited. *Research in Nursing and Health*, *33*(1), 77–84. https://doi.org/10.1002/nur.20362

Schmitt, J. B., Debbelt, C. A., & Schneider, F. M. (2018). Too much information? Predictors of information overload in the context of online news exposure. *Information Communication and Society*, *21*(8), 1151–1167. https://doi.org/10.1080/1369118X.2017.1305427

Shapira, A. L., Handzel, R., & Korczyn, A. D. (2017). The lived experience of Parkinson's Disease : A content analysis of Parkinson's patients' blogs. *Israel Medical Association Journal*, *19*, 685–690.

Sheeran, P., Gollwitzer, P. M., & Bargh, J. A. (2013). Nonconscious Processes and Health. *Health Psychology*, *32*(5), 460–473. https://doi.org/10.1037/a0029203

Shema, H., Bar-Ilan, J., & Thelwall, M. (2015). How is research blogged? A content analysis approach. In *Journal of the Association for Information Science and Technology*. https://doi.org/10.1002/asi.23239

Shimoga, S.V.; Erlyana, E; Rebello, V. (2019). Associations of social media use with physical

ativity and sleep adequacy among adolescents: Cross-sectional survey. *Journal of Medical Internet Research*, *21*(6).

Sieker, H. (2017). *Workout of the month: 5K training schedule for the non-runner*. LifeFitness Blog. www.lifefitness.com/blog/posts/workout-of-the-month-5k-training-schedule-for-the-nonrunner

Sinkler, J. (2107). *the best rep range for big muscles*. Thrive with Jen Sinkler. www.jensinkler.com/the-best-rep-range-for-big-muscles/

Sippel, C. (2017). *How to Improve Mental Toughness & Clear Life's Hurdles*. Anytime Fitness. www.blog.anytimefitness.com/improve-mental-toughness-clear-lifes-hurdles/

Smith, A., & Anderson, M. (2018). Social Media Use in 2018. In *Pew Research Center* (Issue March).

Source attribution and credibility of health and appearance exercise advertisements: Relationship with implicit and explicit attitudes and intentions. (2014). *Journal of Health Psychology*, *19*, 242–252. https://doi.org/10.1177/1359105312468190

Sparling, P. B., & Snow, T. K. (2002). Physical activity patterns in recent college alumni. *Research Quarterly for Exercise and Sport*, *73*(2), 200–205. https://doi.org/10.1080/02701367.2002.10609009

Stacey, D., Hopkins, M., Adamo, K. B., Shorr, R., & Prud'homme, D. (2010). Knowledge translation to fitness trainers: A systematic review. *Implementation Science*, *5*(1), 1–10. https://doi.org/10.1186/1748-5908-5-28

Statista. (2019). Social media usage worldwide. *Statista*.

Statista. (2020). *Number of social network users worldwide from 2017 to 2025 (in billions) [Graph]*. Statista. www.statista.com

Statista Research Department. (2017). Women's opinion on the influence of blogs on their searching behavior in 2014. In *Statista*.

Statistics Canada. (2017). *Canadian Community Health Survey – Nutrition: Nutrient intakes from food and nutritional supplements*. https://www150.statcan.gc.ca/n1/daily-quotidien/170620/dq170620b-eng.htm

Statistics Canada. (2019a). *Canadian Internet Use Survey*. https://doi.org/11-001-X

Statistics Canada. (2019b). *Tracking Physical Activity Levels of Canadians, 2016 and 2017*. Statistics Canada. https://www150.statcan.gc.ca/n1/daily-quotidien/190417/dq190417g-eng.htm

Sundar, S. S. (2008). The MAIN Model: A heurisitc approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin (Eds.), *Digital Media, Youth and Credibiltiy* (Vol. 114, pp. 73–100). The MIT Press. https://doi.org/10.1162/dmal.9780262562324.vii

Teodoro, R., & Naaman, M. (2013). Fitter with Twitter: Understanding personal health and fitness activity in social media. *Proceedings of the 7th International Conference on Weblogs and Social Media, ICWSM 2013*, *January 2013*, 611–620.

Thatcher, J. B., Wright, R. T., Sun, H., Zagenczyk, T. J., & Klein, R. (2018). Mindfulness in information technology use: Definitions, distinctions, and a new measure. *MIS Quarterly: Management Information Systems*, *42*(3), 831–847.

https://doi.org/10.25300/MISQ/2018/11881

Thon, F. M., & Jucks, R. (2017). Believing in Expertise: How Authors' Credentials and Language Use Influence the Credibility of Online Health Information. *Health Communication*, *32*(7), 828–836. https://doi.org/10.1080/10410236.2016.1172296

Tiggemann, M., & Zaccardo, M. (2015). "Exercise to be fit, not skinny": The effect of fitspiration imagery on women's body image. *Body Image*, *15*, 61–67. https://doi.org/10.1016/j.bodyim.2015.06.003

Tiggemann, M., & Zaccardo, M. (2018). 'Strong is the new skinny': A content analysis of #fitspiration images on Instagram. *Journal of Health Psychology*, *23*(8), 1003–1011. https://doi.org/10.1177/1359105316639436

Tracy, S. J. (2010). Qualitative quality: Eight a"big-tent" criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837–851. https://doi.org/10.1177/1077800410383121

Vaterlaus, J. M., Patten, E. V., Roche, C., & Young, J. A. (2015). #Gettinghealthy: The perceived influence of social media on young adult health behaviors. *Computers in Human Behavior*, *45*, 151–157. https://doi.org/10.1016/j.chb.2014.12.013

Vega, D. O. C. (2018). Influence of social network sites in healthy behavior related to vigorous recreational physical activity. *Anthropological Resaches and Studies and Studies*, *8*(15), 155–161. https://doi.org/10.1300/J123v53n01_15

Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, *359*(March), 1146–1151.

Wang, Y., McKee, M., Torbica, A., & Stuckler, D. (2019). Systematic Literature Review on the

Spread of Health-related Misinformation on Social Media. *Social Science and Medicine*, *240*(September), 112552. https://doi.org/10.1016/j.socscimed.2019.112552

We Are Social, DataReportal, & Hootsuite. (2020). *Distribution of social media users in Canada as of January 2020, by age group and gender [Graph]*. Statista. statista.com

We Are Social, Hootsuite, & DataReportal. (2020). Global social networks ranked by number of users 2020. In *Statista*. https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

Wellintra. (2017). *About Us.* Wellintra. www.wellintra.com/delhi/

Westerman, D., Spence, P. R., & Van Der Heide, B. (2014). Social Media as Information Source: Recency of Updates and Credibility of Information. *Journal of Computer-Mediated Communication*, *19*(2), 171–183. https://doi.org/10.1111/jcc4.12041

Wiklund, E., Jonsson, E., Coe, A. B., & Wiklund, M. (2019). 'Strong is the new skinny': navigating fitness hype among teenagers in northern Sweden. *Sport, Education and Society*, *24*(5), 441–454. https://doi.org/10.1080/13573322.2017.1402758

Willis, L. E., & Knobloch-Westerwick, S. (2014). Weighing women down: Messages on weight loss and body shaping in editorial content in popular women's health and fitness magazines. *Health Communication*, *29*(4), 323–331. https://doi.org/10.1080/10410236.2012.755602

Winter, S., & Krämer, N. C. (2012). Selecting Science Information in Web 2.0: How Source Cues, Message Sidedness, and Need for Cognition Influence Users' Exposure to Blog Posts. *Journal of Computer-Mediated Communication*, *18*(1), 80–96. https://doi.org/10.1111/j.1083-6101.2012.01596.x

World Health Organization. (2010). Global recommendations on physical activity for health. In *Geneva: World Health Organization*. https://doi.org/10.1080/11026480410034349

Yiu Wing Kwan, M., Arbour-Nicitopoulos, K. P., Lowe, D., Taman, S., & Faulkner, G. E. J. (2010). Student reception, sources, and believability of health-related information. *Journal of American College Health*, *58*(6), 555–562.

Youniverse. (2017). *Fit at 50 (and older!)*. Youniverse Presented by Youfit Health Clubs. www.youfit.com/blog/fit-50-older/

Zhang, W., & Creswell, J. (2013). The use of mixing procedure of mixed methods in health services research. *Medical Care*, *51*(8), 51–57. https://doi.org/10.1097/MLR.0b013e31824642fd

Zhou, X., & Krishnan, A. (2019). What Predicts Exercise Maintenance and Well-Being? Examining The Influence of Health-Related Psychographic Factors and Social Media Communication. *Health Communication*, *34*(6), 589–597. https://doi.org/10.1080/10410236.2018.1428851

Appendices

Appendix A: Chapter 3. Content Analysis Codebook

	Codes	Description
Type of blog; general theme	Up to 4 codes; as expressed by author	
	1) health/wellness	includes healthy lifestyle/living sites; includes self care/self love sites; includes wellness/well being sites; includes lifestyle sites
	2) fitness/exercise	includes anything related to exercise, physical activity or workouts (various modalities/focus), including exercise prescription; includes weight loss sites
	4) corporate	includes any corporate sites for gyms, equipment, supplements, governing bodies (ie. NASM)
	5) food/nutrition	includes recipe sites; anything related to nutrition, nutrition advice, food, recipes, food substitutes, micro/macro nutrients
	8) other	If it doesn't fit anywhere else; includes 'faith' and 'spirituality', "beauty", "travel" type identifiers
Author Sex	**Coded as:**	
	1) male	
	2) female	
	3) corporate author	
	4) multiple authors	
	5) unknown	
Author Education	**Coded as:**	**select highest level of education; below categories include current students of specified degrees/diplomas**
	1) degree in non-health/fitness field	

	2) degree in health field	includes nutrition, chiropractic, psychology
	3) degree in fitness field	includes exercise/physical activity
	4) advanced degree in non-health/fitness field	includes professional degrees (i.e., L.L.B.)
	5) advanced degree in health field	includes nutrition, chiropractic, psychology, M.D., N.D.
	6) advanced degree in fitness field	includes exercise/physical activity
	7) Diploma/certificate in non-health/fitness field	
	8) diploma/certificate in health field	includes nutrition
	9) diploma/certificate in fitness field	includes exercise/physical activity
	10) Certification education	non-formal education; includes group fitness, pilates, etc.
	11) none/nothing listed	includes statements of profession without education qualifier (ie. Personal trainer); includes statements of passion or interest (this is not education people!); includes multi author blogs where each contributor is either not listed/only some contributors are listed
Certification in fitness	**Coded as:**	
	1) Yes	anything fitness-related; includes personal training, yoga, group fitness; Coaching certs; health coach
	2) No	explicitly stated that no certifications are held in any health/fitness discipline
	3) Certification Body	Blog belongs to a governing body that provides fitness/exericse certifications ; includes blogs from NASM, ACE, etc.
	4) Not Listed	Nothing listed re: certification; includes varied certifications where multiple authors are listed but not all certs are listed for each author; includes claims of certifications without associations/governing body mentioned
	5) N/A	corporate site
self-taught	**Coded as:**	is the author's education or advice based on experiential learning rather than formal eduation or certification in the fitness/exercise field?

	1) yes	explicitly stated
	2) no	based on education/certification/statement by author
	3) unsure	if nothing is mentioned
	4) n/a	in the case of corporate/certification sites
Disclaimer included (legal/liability)	**1) Yes** or **2) No** - must appear somewhere on the site, even in a link (visible from the About Me page)	
History of unhealthy lifestyle	**Coded as:**	author reports a history of unhealthy lifestyle in one way or another
	1) yes	explicitly stated
	2) no	explicitly stated
	3) unsure	if nothing is mentioned
	4) n/a	in the case of corporate/certification sites
Transformation story	**Coded as:**	author reports a transformation from unhealthy to healthy/healthier lifestyle of any kind
	1) yes	explicitly stated
	2) no	not listed; stated outright
	3) n/a	in the case of corporate/certification sites
Focus of the blog (health/fitness/wellness/nutrition/etc) *categories will be sub-coded	Up to 4 codes; as expressed by author	
	1) health/healthy living	includes healthy lifestyle/living sites; includes self care, self love; includes general wellness, well being
	2) fitness	general fitness
	3) fitness/exercise certification or education	includes governing bodies (ie. NASM); includes research-based (knowledge translation) sites
	4) corporate	includes any corporate sites for gyms, equipment, supplements,
	5) weight loss	includes appearance-based sites (ie. Bikini competition prepping)
	6) exercise*	workouts, specific exercises for specific goals, exercise prescription, or focus on specific modality of exercise (ie. Running training, pilates, etc.)

	7) physical activity general	includes anything related to physical activity that is broadly focusing on general activity (ie. Runner's recap of a half marathon)
	8) nutrition*	anything related to food, recipes, supplements
	9) allied health	accupuncture, chiropractic, psychology, hollistic anything, 'natural' anything
	10) beauty/décor/fashion	
	11) travel	includes local travel ie. Within a city; best places to eat healthy foods, etc.
	12) other	If it doesn't fit anywhere else; includes 'faith' and 'spirituality' type identifiers
***exercise type promoted**	**Coded exactly as author claims:** bodybuilding, running, etc. **Coded 'none'** if site has no specific exercise-type promoted (ie. General exercise, general wellness, etc.); **coded 'n/a'** for corporate sites that didn't promote exercise (ie. Gyms promoting membership, corporate supplement sales sites)	
self-proclaimed expert	**Coded as:**	
	1) yes (explicitly stated)	explicitly stated
	2) no (explicitly stated)	explicitly stated
	3) n/a (in the case of corporate/certification sites)	in the case of corporate/certification sites
self-identifies as an exerciser	**Coded as:**	
	1) yes (explicitly stated)	explicitly stated
	2) no (explicitly stated)	explicitly stated
	3) n/a (in the case of corporate/certification sites)	in the case of corporate/certification sites
	Coded as:	

exercise/fitness professional	1) yes (explicitly stated)	includes cases where author claims to be a fitness/exercise professional. Includes fitness/exericse-related corproate blogs (ie. gyms, etc.)
	2) no (explicitly stated; or nothing is mentioned)	
	3) n/a (in the case of corporate sites that are not fitness/exercise-based	includes Travel sites, spiritual wellness sites where no exercise professional credential/education listed
blog is sponsored	Coded as: 1) yes 2) no	can include sites that act as businesses, corporate sites, or sites that are brand sponsored. Does NOT include monetization via banner ads or sites that post endorsement articles. Admittedly I struggled with this category
images of self	**Coded as:**	
	1) Yes	
	2) No	
	3) Yes, of facility/product	for corporate blogs only
	4) Unsure (if images are not directly tied to authorship/bio	
Comments Section	Coded as:	
	1) Yes	
	2) No	
social media links	List all social medial links as they appeared (often as buttons) on the page	
blog subscription option	Coded as:	
	1) Yes	if sign up option is available - indicates receiving blog posts via email OR subscription to the site via login portal is available
	2) No	if no visible subscription option available
product/service for sale via blog	**Coded as:**	
	1) Yes	if anything was available for sale through the website directly
	2) No	if no sales directly through website are available

	3) Indirectly, yes	if linkouts to purchase products via redirect are included

Appendix B: Chapter 2. Original Blog Article

When trying to lose weight, cardio may not be your best ally, as many believe. Yes, cardiovascular exercise burns calories, but so does weight training and the effects of weight training are far greater because they extend far beyond just burning calories during your exercise session. **Here are some impressive bonus burn after effects:**

BEING CARDIO CRAZY COULD BE SABOTAGING YOUR PROGRESS!

The muscle repair process that occurs after weight training requires more energy/calories and of course, having more lean body mass will raise your BMR and a higher basal metabolic rate means you burn more calories at rest.

With only cardio training, your body will burn a lot of your precious lean muscle tissue and this is where the term 'skinny fat' comes from. You may weigh your optimal weight, but your body fat percentage remains high. This is a common mistake that women make. Being overly concerned with the number on the scale vs. body fat. Losing weight is not the same as losing fat. You have to be very cautious about preserving your lean body tissue, and if you're not weight training at all, you're going to be at a huge disadvantage. The rate of natural muscle decline starts after the age of 20 and I refer to them as decade shifts, and after the age of 45, this accelerates even more!

To preserve your LBM (lean body mass) you must strategic with your food intake and type of training you do as well as your food intake in order to preserve your LBM. Strive for a caloric deficit that helps your body make gains and progress without catabolizing your hard earned lean tissue.

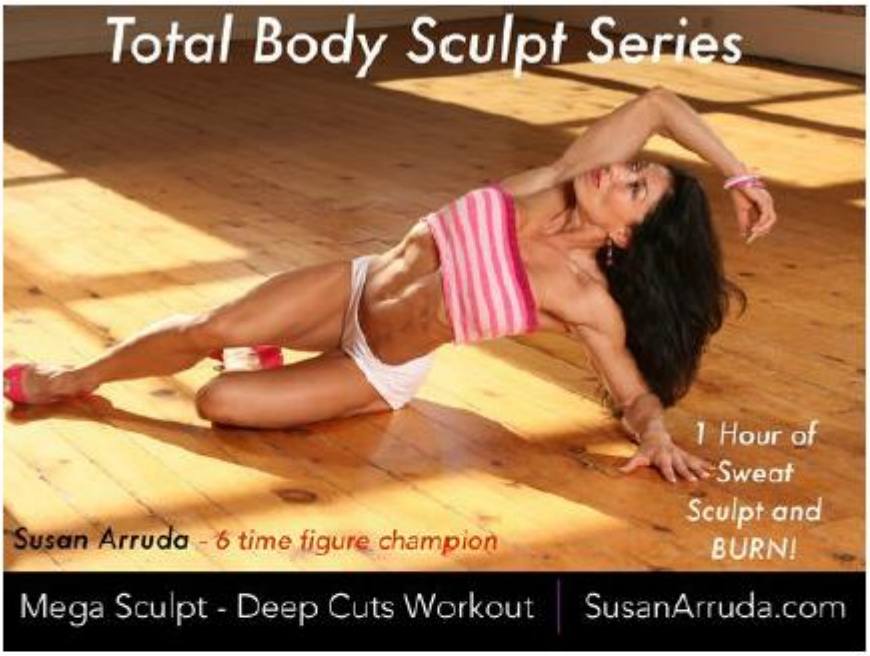
Many women are afraid of becoming big, bulky and muscle bound but the fact is, women do not naturally produce the muscle building hormone, testosterone. They only have about one-tenth the testosterone that males do. With weight training, women will instead produce the type of long, lean, sexy sculpted look that many women desire.

As a general weight loss guideline, do 20-40 minutes of cardio after your weight training sessions and prioritize your resistance workouts over your cardio. Another option is to perform your cardio on days separate from your weight training days. Also note that it doesn't need to be all out HIIT all the time for the most optimal fat burning results. Resistance and cardio training are the perfect duo for producing effective, fast and sustainable fat loss and make greatest changes in your physique. You don't have to ditch the cardio, just don't over do it! If what you've been doing hasn't produced the desired changes in your body, time to try something different and trust to prioritize the weights for awhile and see what happens! You really have nothing to lose in trying this approach for awhile!

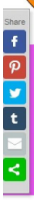
MORE WEIGHT TRAINING BENEFITS:

Weight training is a powerful anti-aging tool with exceptional fat burning potential, helps you increase (or maintain) your strength and bone density, builds/preserves lean body mass and is crucial for offsetting the natural muscle decline due to aging, not to mention the fact that it is an amazing outlet for improving confidence as well as combatting depression! Sign me up!

Get some "iron" and lean muscle tissue training NOW and change your body composition! Get leaner, fitter, AND stronger with my **TOTAL BODY SCULPT** workout!
This weekend, I want you to get started, so I'm offering my workout for a special price of only $5; less than the price of a latte!!!



Appendix C: Chapter 3. Altered Article



ABOUT SUSAN SHOP - WORKOUTS ON DEMAND SUSAN'S BLOG MY FAVOURITE RECIPES PHOTOS OF SUSAN CONTACT SUSAN EXERCISE MOVES HOME

MAY 19, 2017

The one thing many are doing too much of that could be sabotaging your progress!

When trying to lose weight, cardio training is not the only exercise you require, as many believe. Yes, cardiovascular exercise burns calories, but so does resistance training and the effects of resistance training extend far beyond just burning calories during your exercise session.

Here are some impressive bonus burn after effects:

BEING CARDIO CRAZY COULD BE LIMITING YOUR PROGRESS!

The muscle repair process that occurs after resistance training may require more energy/calories, and may contribute to increased muscle mass. Having more muscle mass will raise your metabolism (basal metabolic rate, or BMR) and a higher basal metabolic rate means you burn more calories at rest.

With only cardio training, your body doesn't necessarily increase muscle mass, and without muscle mass, you cannot achieve the 'toned' look. This is why the scale is a poor reflection of your hard work. You may weigh your optimal weight, but your body fat percentage remains high. This is a common mistake that women make. Being overly concerned with the number on the scale vs. body fat. Losing weight is not the same as losing fat. You have to work to preserve your muscle tissue, and if you're not resistance training at all, you're going to be at a huge disadvantage. The rate of natural muscle decline starts after the age of 45 and I refer to them as decade shifts, and after the age of 50, this accelerates even more!

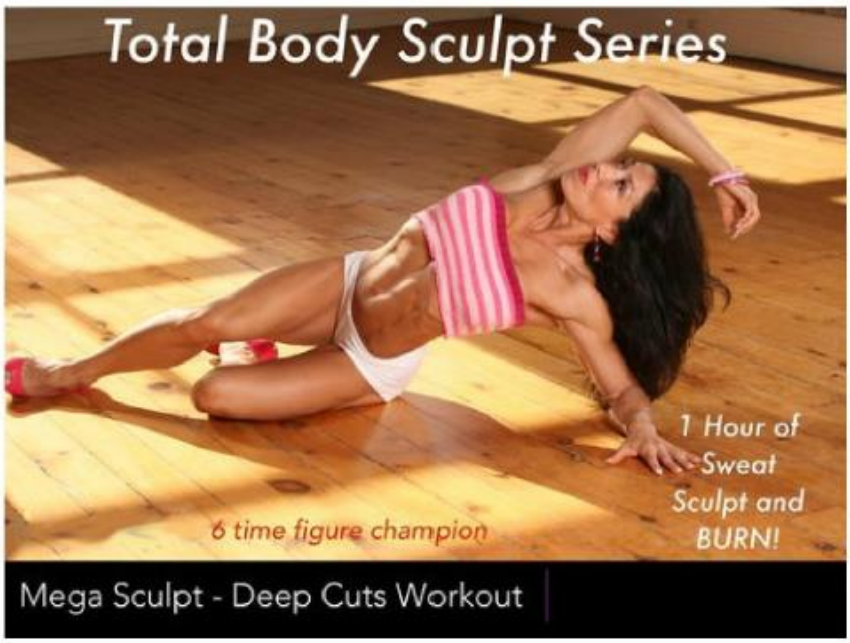
To preserve your LBM (lean body mass) such as muscle, you must be strategic with your food intake and type of physical training you do as well as your food intake in order to preserve your LBM. Strive for a caloric balance that helps your body make gains and progress without ignoring the needs of your hard earned lean tissue – your muscle.

Many women are afraid of becoming big, bulky and muscle bound but the fact is, women do not naturally produce the muscle building hormone, testosterone, in much quantity. Women only have about one-one hundredth the testosterone that males do. With resistance training, women will instead produce strong, lean muscle that can create a sculpted, 'toned' look.

As a general weight loss guideline, include 20-40 minutes of cardio with your resistance training sessions. Another option is to perform your cardio on days separate from your resistance training days. Also note that it doesn't need to be all out High Intensity Interval training (HIIT) all the time for the most optimal fat burning results. Resistance and cardio training are the perfect duo for producing effective, fast and sustainable fat loss and make greatest changes in your physique. You don't have to ditch the cardio, just don't overdo it! If what you've been doing hasn't produced the desired changes in your body, time to try something different and try to prioritize resistance training for a while and see what happens! You really have nothing to lose in trying this approach for a while!

MORE RESISTANCE TRAINING BENEFITS:

Resistance training is a powerful anti-aging tool with exceptional fat burning potential, helps you increase (or maintain) your strength and bone density, builds/preserves lean body mass and is crucial for offsetting the natural muscle decline due to aging, not to mention the fact that it is an amazing outlet for improving confidence as well as combatting depression! Sign me up!



♥ 0 LIKES SHARE

Comments (0) Newest First Subscribe via e-mail

Appendix D: Chapter 4

Qualitative Interview Guide

Opening/greeting: Thank you for making the time to meet with me today. Your thoughts are very important to me and to this research. So, I have a few questions and I'd like you to answer as honestly as possible. Keep in mind that your results will be anonymized so I will not be putting your name in conjunction with any of the results that I'm transcribing from today. Please speak freely and tell me the answers as they actually come to you; what they truly mean to you.

Demographics: Before we start, can you please tell me a few things about yourself? What is your: age, ethnicity, program of study, year of study, height, and weight.

Question 1: Firstly, I'd to ask you a little bit about your own involvement in exercise. Can you tell me, do you regularly participate in exercise of any kind, including sports, and if so, what do you usually do? [If any exercise/sport is mentioned, follow up with: How often do you do these activities?]

Question 2: Now I'd like to ask you a little bit about your preferences when it comes to looking for exercise information. Can you tell me about what resources you prefer to use when looking for information about exercise? *Follow up:* Why is it that you prefer those particular sources?

Thank you. Now, I have an article here I would like for you to read. Please take your time reading the article, and let me know when you have finished.

Exercise article is offered to participant to read

Question 3: I'm interested in knowing how you found the information found on the website in terms of believability. Did you find it unbelievable/believable? *Follow up:* Please tell me a little bit about what it is that you found (un)believable. *Follow up:* did you feel the article was convincing?

Question 4: Would you share your thoughts on the accuracy of the website's information - whether it's reliable? *Follow up:* did you feel the information was trustworthy? did you feel the information was credible?

Question 5: Can you tell me about your thoughts surrounding your own knowledge in the area of information presented on the website?

Question 6: Is this the type of website that you might want to use on your own if this [subject matter on website] was something that you were interested in achieving?

Question7: Please tell me about your thoughts on the website's images. It's layout/design?

Question 8: Is there anything else about the website that struck you? Anything else that you feel might be important to mention?

Closing: Well [participant name], thank you very much for your time. You've certainly given me plenty to think about.