Exploring the Borderlands between Media and Health: Conceptualizing 'Critical Media Health Literacy'

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Abstract

In Canada, as elsewhere, there is considerable concern about adolescents' health. Much of the blame is thought to lie in the social context for today's adolescents and their interaction with and dependence on various media. Yet, it is not clear whether and how adolescents learn to engage critically with media messages about health. Emerging from the authors' previous work in conceptualizing and measuring adolescent health literacy, this article presents the results of a conceptual analysis process using the terms *health literacy*, *critical health literacy*, *media literacy*, *critical media literacy*, *media activism*, and *critical viewing* among others—to arrive at the unique construct of *critical media health literacy* (CMHL).

The concern for adolescent health has increased worldwide—not only in Canada, but also in the United States (Kaiser Family Foundation 2009), Australia (Cinelli and O'Dea 2009), Egypt and China (Fisher et al. 2011), Sweden (Kelly 2007), and Singapore (Yeo et al. 2007). Rates of physical activity are falling as obesity rates are rising at an unprecedented rate (Ogden et al. 2012; Shields 2005; Shields and Tremblay 2010). At the same time, youth engage largely in sedentary recreation: European adolescents spend about 70 percent or 9 hours of their day in activities requiring minimal physical exertion (Ruiz et al. 2011). According to the Canadian Institute for Health Information (2009), overweight youth engage in 15 or more hours of screen time activities per week (e.g. television, electronic games, computers). In the U.S., teenagers spend 53 hours per week in front of screens (Kaiser Family Foundation 2010) and devote more time to engaging with media than any other single activity except sleeping (Strasburger, Jordan and Donnerstein 2010).

Health behaviour patterns (Marx et al. 2007) and conditions (The et al. 2010) established in adolescence persist into adulthood, so it comes as no surprise that adults have considerable difficulty adopting and adhering to healthy behaviours not groomed during their earlier years (Pietilainen et al. 2008). These radical population health trends have been attributed to substantive and unprecedented changes in our living conditions and circumstances so that the unhealthy choice is now the easiest and most tempting one (Daniel, Moore and Kestens 2007; Marmot 2007).

Much of the blame is thought to lie in the social context for today's adolescents and their interaction with and dependence on various media (Bergsma and Carney 2008; Kline, Stewart and Murphy 2006; Strasburger et al. 2010). Use of the Internet, in particular, is the natural environment of the so-called Net Generation (Alvermann, Moon and Hagood 1999), the "digital natives" (Prensky 2001) born after the advent of the World Wide Web. An overwhelming majority of North American youth report being online for a variety of purposes (Jones and Fox 2009). They rely on it daily for communicating with each other, searching out information, and seeking entertainment (Peattie 2007; Rideout, Roberts and Foehr 2005; Statistics Canada 2007). The popular media (web sites, magazines, television) present powerful words and images that undoubtedly influence adolescents' learning about health (Hargreaves and Tiggeman 2002; McCool, Cameron and Petrie 2005). Furthermore, this

emerging digital literacy may influence adolescent preferences for accessing health information (Gray et al. 2009) and how they process that information. It is unclear, however, whether and how adolescents learn to engage critically with media messages about health.

In addition to escalating the risks that youth will passively absorb or actively access misguided or altogether inaccurate health information gleaned through their steady engagement with electronic, print and digital media, such stable sedentary routines not only displace them from homework and hobbies, but also disturb their health status. There is evidence that media use contributes to obesity (Jordan et al. 2008), although possible causal explanations—such as the sedentary nature of the activity, marketing of unhealthy food, and disturbed sense of body image that may result from media use—have not been well established (Strasburger et al. 2010). What we do know is that, collectively, low levels of physical activity, high levels of sedentary behaviour (Canadian Population Health Initiative 2005) and unhealthy eating habits (Starkey, Johnson-Down and Gray-Donald 2001) will substantially affect the prevalence of chronic diseases into the future (American Cancer Society 2008; Van Cleave, Gortmaker and Perrin 2010; Zimmet 2011). Recent research also suggests that low health literacy rates among youth are connected to risky behaviours (Conwell et al. 2003), obesity (Sharif and Blank 2010), and less healthy behaviours (Chang 2011).

Literature Review

Informed by these trends, and emerging from our earlier work in conceptualizing and measuring adolescent health literacy (Begoray, Wharf Higgins and MacDonald 2009; Begoray, Cimon and Wharf Higgins 2010; Wharf Higgins, Begoray and MacDonald 2009; Wu et al. 2010), our attention has turned to the influence of media on adolescents' health literacy and health behaviours. Undoubtedly, we have entered what Chinn (2011) dubs the 'second wave' and what de Leeuw (2012) calls the 'third generation' of health literacy research where pedagogical theories and multiple new literacies connected with empower-ment and broader determinants of health (Sorensen et al. 2012) have surfaced to broaden the view of "users of literacy as active, purposive agents" (61). We were not surprised to locate a good deal of research

detailing the interactions of media and youth (Buckingham 2003; Freishtat and Sandlin 2010; Hobbs and Frost, 2003), particularly in relation to promoting risky health behaviours (Choi et al. 2002; Duke et al. 2009; Stern, 2005; Summerlin-Long et al. 2009). A concept to explain our empirical evidence was largely missing in the literature despite ample writings on topics related to both media and health literacy (e.g. Frisch et al. 2011; Hobbs and Jensen 2009; Sorensen et al. 2012). We were particularly concerned about the marked absence of scholarly efforts to bridge these ideas in Canada following our national leadership in the areas of health promotion (WHO 1986), media education (Federov 2003) and health literacy (e.g. Rootman 2005). With the intention of advancing conceptual and evaluative aspects of health literacy, Frisch et al.'s (2011) review of multiple literacy domains found media literacy to emerge as the frontrunner and advised borrowing from their efforts. Of course, we were not alone in the search for some connection among related literacies as the following quotations from a variety of scholars make obvious:

> Although some online skills are internet-specific, other aspects of these skills are likely to draw on social and technical knowledge acquired in other contexts… internet literacy may draw on media literacy. Indeed, how different forms of literacy interact and support each other is a key question for future research, given today's complex and convergent media and information environment. (Livingstone and Helsper 2009, 324)

> Media literacy not only competes with related concepts like ICT literacy, critical literacy, media management, and information literacy; now 'digital citizenship' and 'new media literacies' emphasize the skills and knowledge needed to be effective in the increasingly social media environment. (Hobbs and Jensen 2009, 5)

> Neither the concepts and related research on health literacy, nor on media literacy, seem therefore comprehensive enough to explain how adolescents interpret health-related content in mass media. (Levin-Zamir, Lemish, and Gofin 2011, 324)

... critical health literacy can be seen as a concept made up of interconnected domains which relate to other important constructs, but which nevertheless retains a key focus on the interaction between individuals and information about health, and how information can be used on individual and collective levels to achieve outcomes that promote health. (Chinn 2011, 65)

There is currently no commonly accepted theory of health-promoting media literacy education. (Bergsma 2011, 25)

Certainly theories and research on health literacy, critical health literacy and media literacy were available and informative, but they seemed at once interrelated and distinct enough from each other that we were prompted to explore the likeness and unlikeness of the two and other related concepts (Walker and Avant 1995). Lest we be accused of decanting a new wine from a familiar bottle (Tones 2002), a claim rallied against health literacy in its formative days, we entered this phase of our research agenda with an open mind-set that yet another "all new and improved" version of existing concepts would not necessarily advance the field. We did not want to further complicate nor clutter the "health-media-critical thinking" terrain but reasoned that a unifying idea might simplify and unite multi-disciplinary thinking. We were beckoned by Biesta's (2010) call for 'reconnecting and updating' our educational research. Thus, we were interested in the specific development and application of critical media health literacy (CMHL) and the processes by which it is developed in adolescents. Bolstered by the innovative efforts of Levin-Zamir and colleagues (2011) in conceptualizing and testing media health literacy among youth, and guided by the contemporary work described by Sun (2011) and Holmstrom and Roing (2010), we embarked in a conceptual analysis process informed by Rodgers (1993) and Haase et al. (1993).

Methodology

We conducted a scoping review—a comprehensive, documented, transparent and replicable identification and appraisal of a broadly defined issue in relevant literature (Arskey & O'Malley, 2005). Article searches were conducted in the peer-reviewed databases of EBSCO Host, Academic Search Complete, Nursing/Academic and ERIC, Web of Science, JSTOR, Google Scholar, Social Sciences Index, EdResearch, Humanities Index, Ed/IT Lib (Education and Information Technology), and Wilson Web databases. Search terms included combinations using the terms "critical health literacy," "critical media literacy," and "critical media health literacy." Only full-text, peer-reviewed articles written in English between the years 1995-2010 were retrieved. After removing duplicates, the scoping review resulted in 442 articles that met the search criteria (see figure 1). After an initial review of each abstract by both authors to determine the relevance of the article for our purposes of conceptual development, 126 articles were located and read. Of these, just under half of the total number of articles (48 percent or 61) were retained and analyzed by the primary author. Articles retained had to address the conceptual or evaluative discussion, give an empirical investigation of critical health literacy or critical media literacy, or provide a synthesis of these bodies of literature. Of major interest was the fact that no articles were located containing all four descriptors together: *critical, media, health, literacy*.

In keeping with Rodgers' (1993) guidelines on conceptual analysis, articles were examined for excerpts describing or explaining: defining attributes, antecedents and outcomes related to our 'concept of interest,' and empirical referents. These data were then compared and contrasted, colour coded and extracted for conceptual overlap, distinctions and synthesis. Although the conceptual analysis process, as outlined by Rodgers, includes identifying surrogate terms as "multiple ways of expressing the same concept" (83), we considered that the concepts searched for in the literature noted above were listed as surrogate terms.

Results

The results for each step in the conceptual analysis are described in the following figure 2 and present a conceptual rendering of the defining attributes of critical media health literacy delineating the unifying constructs gleaned from the literature. Following the work of Haase et al. (1993), table 1 summarizes our three-concept process model based on the literature review and interviews. This is followed by a discussion of the empirical referents for measuring CMHL. Lastly, we present our proposed working

Figure 1. Selection of articles included in the conceptual analysis
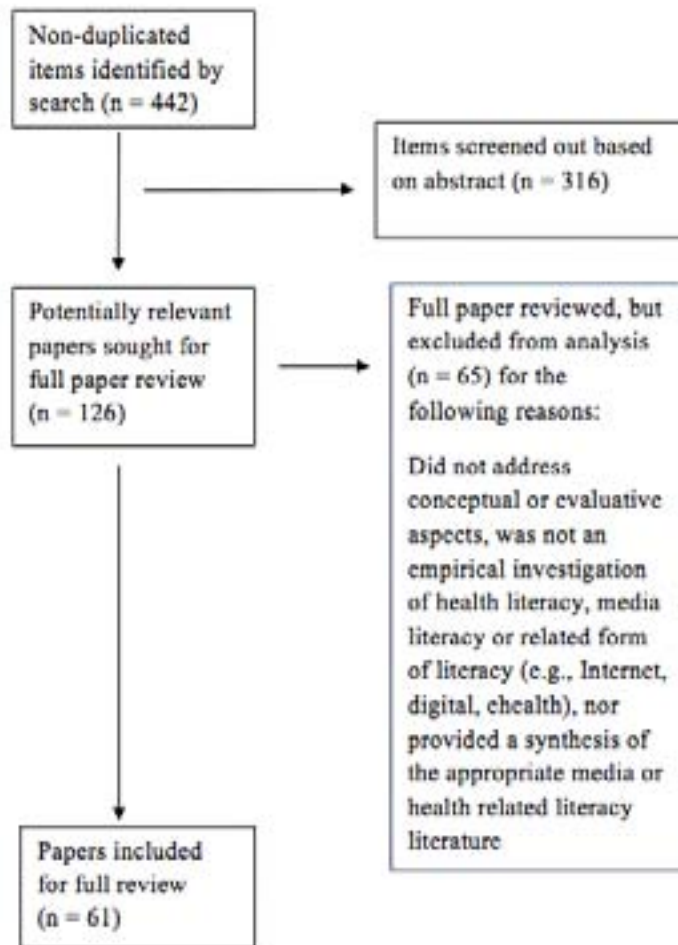
empirical referents for measuring CMHL. Lastly, we present our proposed working definition of CMHL.

The Defining Attributes

What we consider to be the characteristics, descriptions or ideas embedded in CMHL are those that consistently surfaced and clustered in the literature (Rodgers 1993). We consider the following three characteristics to be the defining attributes of CMHL, and present them purposively in order to capture a sequential process that emerged from the literature.

A skill set. Almost all definitions of literacy included the verbs: accessing, understanding, evaluating/appraising, creating, using/acting on the information received, and negotiating a multiplicity of discourses. These competencies included not only related personal, cognitive and social abilities required of literacy in general, but also reflective, discriminating and interpretive skills that give rise to one's capacity to critically interact with media rather than react merely as passive consumers (Bergsma and

Carney 2008; Brey, Clark, and Wantz 2008; Collins, Doyon, McAuley, and Quijda 2011; Hobbs 2005; Nutbeam 2008) regardless of the medium or technology used for disseminating the information (Rogow 2011). Such skills were evident in the notion of code breaker as a 'culture jammer' (Chung and Kirby 2009) in challenging the influence of corporate commercialism, and with 'eHealth literacy' (Tarver 2009) in appraising the relative value, credibility and limitations of digital content to inform personal healthcare decisions. Key to the skill set is the recognition that content of media texts are socially, institutionally, commercially or politically situated or constructed (Flores-Koulis and Deal 2008; Van Heertum and Share 2006), and that messages are created and disseminated in different social, political and historical contexts.

Empowerment. Once equipped with the appropriate skill set, the desired outcomes are tied to the concept of empowerment, both at the personal and community levels. Many definitions used the

Figure 2. The defining attributes of critical media health literacy
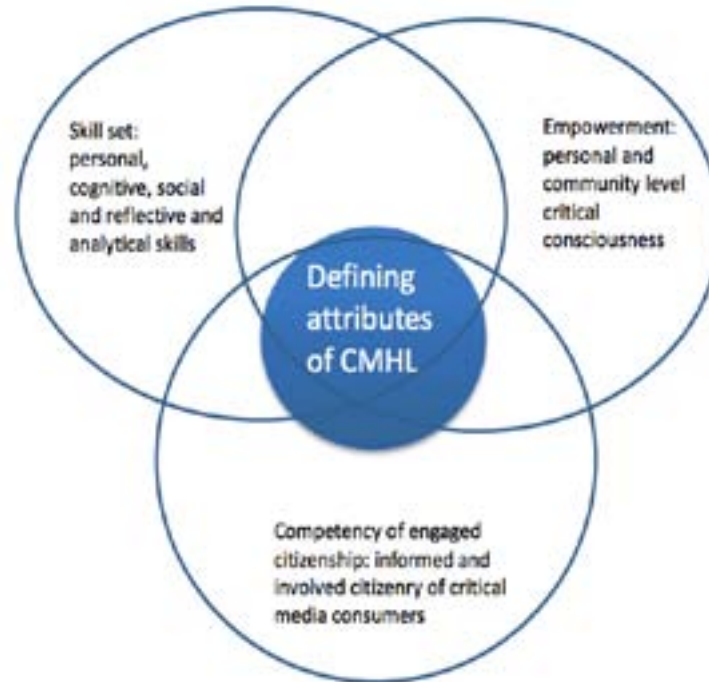
term *empowerment*, as well as *critical consciousness, individual autonomy/choice, human rights, fundamental freedoms*, and *transforming the world for the better*. Once empowered, individuals can make appropriate and informed health decisions for themselves and their families, as well as advocate for larger policy or structural changes to enhance the health of others (Abel 2008; McAllister 2008; Morrell 2002; Nutbeam 2008; Porr, Drummond and Richter 2006). Empowerment as the connecting concept amid the other two defining attributes is best explained by Paakkari and Paakaari (2012) who contend that a broadened definition of health literacy is required because of the need for:

> the teaching of "survival skills" in preparation for twenty-first century citizenship. Such skills …include critical thinking and problem solving, accessing and analyzing information, collaboration, curiosity, imagination and initiative. (134)

A competency of engaged citizenship. Empowered individuals then constitute an informed and engaged citizenry of critical media consumers (Collins et al. 2011; Kline, Stewart and Murphy 2006; Livingstone 2004). Armed with their CMHL skill set, healthy and productive decisions can be made "in the workplace, in the supermarket, in social and recreational settings, within families and neighbourhoods, and in relation to various information opportunities and decisions that impact upon health every day" (Peerson and Saunders 2009, 289). Because of the enduring interconnectedness and interdependence with the media, nurturing CMHL is critical to both self-expression and social inclusion (Mihailidis 2009). Ultimately, CMHL becomes a democratic right and civic responsibility by which citizens can more effectively participate socially and politically or be fully engaged with the complexities of modern life (Kupersmidt, Scull and Weintraub Austin 2010).

A Three Concept Process Model for CMHL

In addition to identifying the defining attributes, the concept analysis process included distinguishing the antecedents and outcomes of CMHL. Below, we discuss the antecedents and outcomes. Table 1 presents a summary of the antecedents, defining attributes and outcomes in the three concept process model for CMHL.

Antecedents to CMHL. In identifying "situations, events, or phenomena that precede an example of the concept" (Rodgers 1993, 83), the antecedents to CMHL that we located in the literature points to educational opportunities that develop age and context specific health knowledge; dialectic, reflective and critical analysis skills; and

Table 1. Three concept process model

Antecedents	Critical Attributes	Outcomes
Student-centred, discovery-based learning environment	A Skill Set: reflective, discriminating and interpretive abilities	Personal, cognitive and social abilities combined with reflective interpretive skills to critically interact with media.
Dialogical reflection and Socratic questioning; critically negotiate meanings and analyze media culture.	Empowerment	Making individual and collective healthy and productive decisions across life settings.
Recognition that media portray selective ideas and values; active authors of media for social activism to address social determinants of health.	Engaged Citizenship	Informed, involved, and included citizens effectively participate in the complexities of modern life.

the self-efficacy necessary to put that knowledge into practice. In keeping with the empowerment characteristic described above, opportunities to learn about and acquire the skills and competencies of CMHL are situated in a constructivist learning and critical pedagogy paradigms (Flores-Koulish and Deal 2008; Hobbs 2005; Kline, Stewart and Murphy 2006; Van Heertum and Share 2006). CMHL must also be student-centered and discovery based (Barnes et al. 2007; Hobbs and Frost 2003) and "teach young people to develop playful, competent relationships with the media, but always in ways limited by what young people discover on their own terms" (Poyntz 2006, 159). Scholars have cautioned that the verb 'teach' may not be the most accurate:

> Media educators can no longer afford to sit back and simply teach ... it is high time that media literacy become the proactive movement that enables the future civic voices of democracies worldwide to create the meaningful dialog, collaborations, and struggles that will hold our civic societies together. (Mihailidis 2011, 5)

We think a CMHL approach might begin with the use of media diaries documenting individual media encounters, habits and consumption. Learning about the technical search strategies and nurturing critical questioning practices follow. Classroom activities may conclude with enabling students to first deconstruct messages through simulation, gaming and role playing, and then compose and create media messages of their own that "inadvertently challenge and engage with power" (Poyntz 2006, 171).

Outcomes. Theoretically, the outcomes of CMHL are captured in the third defining attribute of engaged citizenship. Much like Nutbeam's (2000) oft cited phrase that health literacy is more than

knowing how to "read pamphlets and successfully make appointments" (264), multi-literacies go beyond serving individual needs. As Livingstone (2008) states, "media and information literacies do not simply concern the ability to use the electronic program guide for digital television, or to complete one's income tax return online" to capture embedded notions of empowerment, democratic citizenship and social action (114). A person with CMHL possesses the personal resources to make informed health decisions, and participate in ongoing public and private dialogues (Zarcadoolas, Pleasant and Greer 2005). Their knowledge does not remain in their possession; but is, in fact, a contribution to the social capital of their community (Ratzan 2001). The ability to discover, detect and decode hidden agendas or dominant discourses should then inspire them to challenge and transform the more distal conditions influencing the health of others and their community. In doing so, they engage with issues of social justice and critical citizenship to create a more equitable and authentic democracy (Van Heertum and Share 2006).

Empirical Referents

According to Walker and Avant (2005), empirical referents are used to facilitate the measurement of a concept and to help develop research instruments. In health literacy, there remains no 'gold standard' for measuring its constructs, domains, dimensions or levels (Berkman et al., 2010). This is likely due to the variety of definitions (Sorenson et al. 2012) and numerous (and often nebulous) conceptual frameworks that permeate the literature (Begoray and Kwan 2012; Frisch et al. 2011; Paakkari and Paakkari 2012). The most frequently relied upon instruments include clinical and reading-oriented

measures for adults; for example: Rapid Estimate of Adult Literacy in Medicine (REALM) (Murphy et al. 1993), the Test of Functional Health Literacy in Adults (TOFHLA) (Parker, Williams, and Nurss 1995), the National Assessment of Adult Literacy (NAAL), and the Health Activity Literacy Scale (Kutner, Greenberg and Baer 2006). Mostly, these measures treat health literacy as a derivative of literacy rather than as an independent and comprehensive concept (Nutbeam 2008). Context (other than clinical ones) are largely missing from measures of health literacy. Population level health literacy surveys in Canada and Australia have broadened the scope to assess individuals' performance on health-related activities in health promotion, health protection, disease prevention, healthcare and disease management, and navigation (Peerson and Saunders 2009). For Kickbusch (2006) however, health is everywhere. Frisch et al. (2011) assert that "health literacy has very different meanings depending on the context" and that "measuring health literacy will be best achieved where content and context are well defined" (123). It is this omnipresence in a range of contexts, especially media ones, that challenges its measurement. The few tools that exist for adolescents measure limited aspects of health literacy such as reading ability (Davis et al. 2006), self-reported health literacy (Norman and Skinner 2006), or only measure select skills of health literacy (Ishikawa and Yano 2008; Wu et al. 2010) such as comprehending and evaluating as expressed through writing. Mogford, Gould and DeVoght (2011) piloted a curriculum evaluation tool to assess aspects of critical health literacy, but it remains publicly unavailable.

Measures of media literacy are somewhat more established if no less agreed upon (Christ 2004), even with a general consensus of what student outcomes should resemble (Scharrer 2002). Yet they still focus on knowledge and attitudes, rather than evaluating individual changes in risk behaviours, preventing risk behaviours (Bergsma and Carney 2008) or measuring academic performance (Hobbs and Frost 2003). An exception to the former is Primack and colleagues (2006) who developed a smoking media literacy scale for students through psychometric methods. In terms of methods, some researchers use both qualitative and quantitative measures (Hobbs and Frost 2003) and assess students' ability to answer questions in a pre-test/post/test format. Using a conceptually based

media literacy model, Arke and Primack (2009) developed and piloted a measure to quantify media literacy specifically including a critical thinking measure with a small sample of college aged students. Following implementation of the two-week Media Detective program Kupersmidt et al. (2010) measured elementary students' critical thinking abilities. Students earned a "deconstruction skills score" (527) of their ability to analyze a print alcohol advertisement, and then the researchers used an eight item instrument to assess students' intentions to use alcohol and tobacco. Others (e.g. Scharrer 2002) use project based measures such as asking students to create their own advertisements and then assessing for an understanding of media techniques demonstrated by the project by using a marking rubric, for example. These efforts notwithstanding, the task of developing measure(s) that bridge the concepts of health, critical, media and literacy remains both an opportunity and a challenge.

Definition of CMHL

From this process, we propose a working definition: *critical media health literacy (CMHL) is a right of citizenship and empowers individuals and groups, in a risky consumer society, to critically interpret and use media as a means to engage in decision-making processes and dialogues; exert control over their health and everyday events; and make healthy changes for themselves and their communities*. At this point, rather than identify a model case (we could not locate a real life example that included all of the defining attributes) we instead borrow strategies from the hybrid model of conceptual analysis (Schwartz-Barcott and Kim 1993) to apply our definition in the field in an empirical test of the definition with 90 tenth grade students ages 14 and 15.

Our previous research indicates that adolescents need assistance to develop their ability to evaluate media messages (Begoray, Cimon and Wharf Higgins 2010). Our current research includes a classroom intervention intended to develop students' CMHL, based on our concept as outlined above. We are working in classes where students are studying health education as part of British Columbia, Canada's *Planning 10* curriculum. The curriculum includes four topics and nine learning outcomes: healthy living (nutrition, exercise), health information (STIs, road safety), healthy relationships

(dating, harassment), healthy decisions (sex, workplace, Internet). The curriculum also recommends 36 hours of health education and mandates "media literacy for health information—accuracy, bias, point of view, relevance," a phrase that suggests critical media health literacy.

Although it is beyond the scope of this paper to provide a full reporting of the results, preliminary analyses suggest the development of CMHL to be a long-term process. Although students who participated in our intervention significantly advanced their quantitative scores on a test to measure their critical media health literacy over a six-lesson span, the scores were especially low. Median test scores increased from 6.0 to 7.5 out of a maximum of 28—an increase from 22 percent to 26 percent (Z = -2.264, *P* = 0.024). A review of their assignments revealed a general lack of critical or evaluative stance of health information, as much of their 'public health message' communicated a patho-physiological or behavioural intent to avoiding disease, rather than a more sophisticated portrayal of a health issue. Students relied on a limited number of sources, primarily Internet-based. In our focus group results with grade 10 students, they recommended that improving their CMHL would necessitate participatory, experiential, multi-modal and digital teaching approaches. We continue to work with students in discussions of the construction of media messages and the targeting of audiences using persuasive techniques in order to further research the concept of CMHL and its application to health literacy education.

Discussion

According to Walker and Avant (1995), the results of a concept analysis provide construct validity and offer insight into hypothesis generation and tool development and/or refinement. We concur and argue that despite its conceptual similarity to both health literacy and media literacy (given the enormous influence of media on the health decisions of adolescents) CMHL needs to be perceived as a unique construct. As with others (Chinn 2011; Livingstone 2008), we recognize the interdependence and interaction between individuals' abilities and their multiple health literacy sources (i.e., web sites, mass media, health education pamphlets, friends and family). While the field of health literacy hopes to make

advancements by increasing the public's skills and preparing tailored and appropriate public health communication materials (Berkman, Davis and McCormack 2010) and adapting the health system to more closely match the abilities of the populace at large (Institutes of Medicine 2004; Rootman, 2005; Rudd 2007), we do not expect commercial mass media to alter their practices to make their messages more transparent. Wills (2009) notes: "Being able to read a food label is one thing, understanding why a McDonald's is so cheap, filling and ubiquitous is another" (4). Clearly, there is a difference between basic functional health literacy and CMHL.

Because of their shared ideology and foci to produce empowered citizens, we suggest drawing on and blending the pedagogical traditions of media education (e.g. Rogow 2004) and health education (Paakkari and Paakkari 2012) to create a critical media health literacy curriculum to prepare youth to navigate the cluttered and confusing landscape, usually fraught with competing and biased health messages. Such a curriculum is sequenced and layered, founded on critical frameworks comprising the health literacy (Nutbeam 2008), media literacy (Hobbs and Frost 2003) and media activism/cultural studies (Buckingham 2003) literature and conceptualizing the literacy skill set as a continuum or hierarchy of abilities. British Columbia's Planning 10 health module makes a basic attempt to introduce media concepts to health but as media grow and change, the curriculum must also adapt. Learning from the failure of the didactic approach in health education (e.g. Just Say No) or the protectionist view of media education (e.g. Kill Your TV), where students are seen as passive and compliant recipients of information or messages, and in keeping with the emancipatory ideals of Freire (1970), an active inquiry curriculum is needed. Such a curriculum is constructivist, discovery-based and participatory. Further, an experiential curriculum is ideally integrated into multiple subject areas (history, arts, sciences). Most importantly, curriculum development should engage youth in its design so that it resonates with their experiences, is meaningful in terms of both health and media habits (MacDonald et al. 2011) and encourages a questioning stance on all messages.

We are most interested in continuing curriculum development based on the concept of

CMHL and general health promotion. We also want to build a curriculum based on the premises of 'social reconstruction' (McNeil 1990) which supports our beliefs that: a) education can result in social change; b) learners can act on problems of importance to themselves and the community; c) curriculum can facilitate an awareness of power dynamics; e) conscientization can take place among learners (see Freire 1970); and, e) learners can challenge current social norms; that is, curriculum can be emancipatory (Begoray and Banister 2005, 297).

We are committed to developing long term relationships with teachers and students in order to have more time to construct CMHL along with students. We also want to work with middle school students (grades 5 to 8) as these grades are more likely to have several subjects taught by the same teacher and thereby offering chances for integrating media literacy, health education and critical thinking across the curriculum. We will continue to research the concept of Critical Media Health Literacy in the classroom. Our model, we contend, is valuable to examine and expand the theoretical framework and practical application of CMHL with today's adolescents. Informed by and integrating the theoretical aspects of critical thinking, health literacy and media literacy as a comprehensive construct, we understand CMHL to be more than health literacy rendered in a media context, or media literacy applied to health messages, or a critical interpretive lens imposed on either, but a fusion of their multi-dimensional and theoretical richness. Time will tell whether or not CMHL is a third wave, fourth generation, or new varietal of media or health literacy. We are excited about the prospects of CMHL, as a hybrid notion arising from the borderlands between media and health, to facilitate the development of essential skills for a healthy and just future.

References

Alvermann, Donna, Jennifer S. Moon, and Margaret C. Hagood. 1999. *Popular Culture in the Classroom: Teaching and Researching Critical Media Literacy.* New York, NY: Routledge.

American Cancer Society. 2008. "Cancer Facts and Figures 2008." Atlanta, GA: American Cancer Society.

Arke, Edward, and Brian Primack. 2009. "Quantifying Media Literacy: Development, Reliability, and Validity of a New Measure." *Educational Media International* 46 (1): 53-65.

Arksey, H., and L. O'Malley. 2005. "Scoping Studies: Towards a Methodological Framework." *International Journal of Social Research Methodology* 8: 19-32.

Barnes, Cliona, Brian Flanagan, Farrek Corcoran, and Brian O`Neill. 2007. *Critical Media Literacy in Ireland.* Dublin City University: The Radharc Trust.

Begoray, Deborah, and Brenda Kwan. 2011. "A Canadian Exploratory Study to Define a Measure of Health Literacy." *Health Promotion International* 27 (1). doi:10.1093/heapro/dar015

Begoray, Deborah, and Elizabeth Banister. 2005. "Using Curriculum Design Principles to Improve Health Education for Adolescent Girls." *Health Care for Women International* 26, (4): 295-307.

Begoray, Deborah, Joan Wharf Higgins, and Marjorie MacDonald. 2009. "High School Health Curriculum and Health Literacy: Canadian Student Voices." *Global Health Promotion* 16 (4): 35-42.

Begoray, Deborah, Mimi Cimon, and Joan Wharf Higgins. 2010. *Media/ting Health: The Powerful Role of Media as Adolescent Health Literacy Educator.* New York: NovaScience.

Bergsma, Lynda. 2004. "Empowerment Education: The Link between Media Literacy and Health Promotion." *American Behavioral Scientist* 48: 152-64.

———. 2011. "Media Literacy and Health Promotion for Adolescents." *Journal of Media Literacy Education* 3 (1): 25-8.

Bergsma, Lynda J. and Mary E. Carney. 2008. "Effectiveness of Health-promoting Media Literacy Education: A Systematic Review." *Health Education Research* 23 (3): 522-42.

Berkman, Nancy D., Terry C. Davis, and Lauren McCormack. 2010. "Health Literacy: What is it?" *Journal of Health Communication* 15 (2): 9-19.

Biesta, G. J. J. (2010). *Good Education in an Age of Measurement: Ethics, Politics, Democracy.* Boulder, CO: Paradigm Publishers.

Buckingham, David. 2003. *Media Education: Literacy, Learning and Contemporary Culture.* Oxford, UK: Blackwell Publishing.

Brey, Rebecca A., Susan E. Clark, and Molly S. Wantz. 2008. "This is Your Future: A Case Study Approach to Foster Health Literacy." *Journal of School Health* 78 (6): 351-55.

Canadian Institute for Health Information. 2009. "Comparing Activity and Fruit and Vegetable Consumption by Weight Status Among Children and Youth." http://www.cihi.ca.

Canadian Population Health Initiative. 2005. "Improving the Health of Young Canadians." Ottawa: Canadian Institute for Health Information. Report No: ISBN 1-55392-680-3.

Chang, L.C. 2011. "Health Literacy: Self-reported Status and Health Promoting Behaviours for Adolescents in Taiwan. *Journal of Clinical Nursing* 20 (1-2): 190-96.

Chinn, Deborah. 2011. "Critical Health Literacy: A Review and Critical Analysis." *Social Science and Medicine* 73 (1): 60-7.

Choi, Won S., Jasjit S. Ahluwalia, Kari J. Harris, and Kolawole Okuyemi. 2002. "Progression to Established Smoking: The Influence of Tobacco Marketing." *American Journal of Preventive Medicine* 22 (4): 228-33.

Christ, William G. 2004. "Assessment, Media Literacy Standards, and Higher Education." *American Behavioral Scientist* 48 (1): 92-6.

Chung, Sheng Kuan, and Michael S. Kirby. 2009. "Media Literacy Art Education: Logos, Culture Jamming, and Activism." *Art Education* 62 (1): 34-39.

Cinelli, Renata Leah, and Jennifer A. O'Dea. 2009. "Body Image and Obesity among Australian Adolescents from Indigenous and Anglo-European Backgrounds: Implications for Health Promotion and Obesity Prevention among Aboriginal Youth." *Health Education Research* 24 (6): 1059-68.

Collins, Jessica, Denis Doyon, Christie McAuley, and Andrea Isabel Quijada. 2011. "Reading, Writing and Deconstructing: Media Literacy as Part of the School Curriculum." In *Bringing Schools into the 21st Century*, edited by Guofang Wan and Dianne M. Gut, 159-85. New York: Springer.

Conwell, L.S., M.J. O'Callaghan, M.J. Andersen, W. Bor, J.M. Najman, and G.M. Williams. 2003. "Early Adolescent Smoking and a Web of Personal and Social Disadvantage." *Journal of Pediatrics & Child Health* 39 (8): 580-585.

Davis, Terry C., Michael S. Wolf, Pat F. Bass, Mark Middlebrooks, Estela Kennen, David W. Baker, Charles L. Bennett, Ramon Durazo-Arvizu, Anna Bocchini, Stephanie Savory, and Ruth M. Parker. 2006. "Low Literacy Impairs Comprehension of Prescription Drug Warning Labels." *Journal of General Internal Medicine* 21: 847–851. doi: 10.1111/j.1525-1497.2006.00529.x

Daniel, Mark, Spencer Moore, and Yan Kestens. 2008. "Framing the Biosocial Pathways Underlying Associations between Place and Cardiometabolic Disease." *Health and Place* 14 (2): 117-32.

de Leeuw, Evelyn. 2012. "The Political Ecosystem of Health Literacies." *Health Promotion International* 27 (1):1-4.

Duke, Jennifer C., J. A. Allen, Linda L.Pederson, Paul D. Mowery, Haijun Xiao, and James D. Sargent. 2009. "Reported Exposure to Pro-tobacco Messages in the Media: Trends Among Youth in the United States, 2000-2004." *American Journal of Health Promotion* 23 (3): 195-202.

Fedorov, A. 2003. "Media Education and Media Literacy: Experts' Opinions." In *MENTOR. A Media Education Curriculum for Teachers in the Mediterranean*. Paris: UNESCO. http://edu.of.ru/mediaeducation/default.asp?ob_no=850>

Flores-Koulish, S.A., and Debby Deal. 2008. "Reacting to Change: Critical Media Literacy for United States Reading Teachers?" *Studies in Media and Information Literacy Education* 8 (3):1–14.

Fisher, Jane, Meena Cabral de Mello, Takashi Izutsu, Lakshmi Vijayakumar, Myron L. Belfer, and Olayinka Omigbodun . 2011. "Emerging Concerns in the Mental Health of Adolescents in Resource-Constrained Settings." *International Journal of Social Psychiatry* 57 (1): 98-102.

Forster-Coull, Lisa, Ryna Levy-Milne, and Susan I. Barr. 2004. *British Columbia Nutrition Survey. Report on Energy and Nutrient Intakes*. Health Canada, British Columbia Ministry of Health Planning and University of British Columbia. http://www.healthservices.gov.bc.ca/prevent/nutrition/pdf/nutrientsreport.pdf.

Freishtat, Richard L., and Jennifer A. Sandlin. 2010. "Shaping Youth Discourse About Technology: Technological Colonization, Manifest Destiny, and the Frontier Myth in Facebook's Public Pedagogy." *Educational Studies: Journal of the American Educational Studies Association* 46 (5): 503-23.

Frisch, Anne-Linda, Luca Camerini, Nicola Diviani, and Peter J. Schulz. 2012. "Defining and Measuring Health Literacy: How Can We Profit From Other Literacy Domains?" *Health Promotion International* 27 (1): 117-26.

Ghaddar, Suad. F., Melissa A. Valerio, Carolyn M. Garcia, and Lucy Hansen. 2012. "Adolescent Health Literacy: The Importance of Credible Sources for Online Health Information." *Journal of School Health* 82 (1): 28-36.

Gray, Nicola J., Jonathan D. Klein, Peter R. Noyce, Tracy S. Sesselberg, and Judith A. Cantrill. 2005. "Health Information-seeking Behaviour in Adolescence: The Place of the Internet." *Social Science and Medicine* 60: 1467-78.

Haase, Joan E., Nancy Kline Leidy, Doris D. Coward, Terri Britt, and Patricia E. Penn. 1993. "Simultaneous Concept Analysis: A Strategy for Developing Multiple Interrelated Concepts." In *Concept Development in Nursing: Foundations, Techniques and Applications*, edited by Beth L. Rodgers and Kathleen A. Knafl, 175-92. Philadelphia, PA: W.B. Saunders.

Hargreaves, Duane, and Marika Tiggemann. 2002. "The Effect of Television Commercials on Mood and Body Dissatisfaction: The Role of Appearance-Schema Activation." *Journal of Social and Clinical Psychology*

21 (3): 287-308.

Hobbs, Renee. 2005. "The State of Media Literacy Education." *Journal of Communication* 55 (4): 865-71.

Hobbs, Renee, and Richard Frost. 2003. "Measuring the Acquisition of Media Literacy Skills." *Reading Research Quarterly* 38 (3): 330-55.

Hobbs, Renee, and Amy Jensen. 2009. "The Past, Present and Future of Media Literacy Education." *Journal of Media Literacy Education* 1 (1): 1-11.

Holmstrom, Inger, and Marta Roing. 2010. "The Relation Between Patient-Centeredness and Patient Empowerment: A Discussion on Concepts." *Patient Education and Counseling* 79 (2): 167-72.

Institute of Medicine. 2004. Health Literacy: A Prescription to End Confusion. Washington D.C.: The National Academy of Sciences.

Ishikawa, Hirona, and Eiji Yano. 2008. "Patient Health Literacy and Participation in the Health-Care Process." *Health Expectations* 11 (2): 113-22.

Jones, Sydney, and Susannah Fox. 2009. "Generations Online in 2009." Washington DC: Pew Research Center. http://www.pewinternet.org/~/media//Files/Reports/2009/PIP_Generations_2009.pdf.

Jordan Amy, Emily Kramer-Golinkoff, and Victor Strasburger. 2008. "Does Adolescent Media Use Cause Obesity and Eating Disorders?" *Adolescent Medicine State of the Art Reviews* 19 (3): 431-49, viii-ix.

Kaiser Family Foundation. 2010. *Generation M2: Media in the Lives of 8-18 Year Olds*. http://www.kff.org/entmedia/mh012010pkg.cfm.

Kelly, Kristina B. 2007. "Promoting Adolescent Health." *Acta Pædiatrica* 96: 1389–91.

Kickbusch, Ilona. 2006. "Health Literacy: Empowering Children to Make Healthy Choices." *Virtually Healthy*, 41. Centre for Health Promotion: Children, Youth and Women's Health Service, South Australia.

Kline, Stephen, Kym Stewart, and David Murphy. 2006. "Media Literacy in the Risk Society: Toward a Risk Reduction Strategy." *Canadian Journal of Education* 29 (1): 131-53.

Kupersmidt, Janis B., Tracy M. Scull, and Erica Weintraub Austin. 2010. "Media Literacy Education for Elementary School Substance Use Prevention: Study of Media Detective." *Pediatrics* 126: 525-31.

Kutner, Mark, Elizabeth Greenberg, and Justin Baer. 2005. "National Assessment of Adult Literacy (NAAL): A First Look at the Literacy of America's Adults in the 21st Century." Washington, DC: National Center for Education Statistics, Institute of Education Sciences.

Levin-Zamir, Diane, Dafna Lemish, and Rosa Gofin. 2011. "Media Health Literacy (MHL): Development and Measurement of the Concept among Adolescents." *Health Education Research* 26 (2): 323-35.

Livingstone, Sonia. 2004. "The Challenge of Changing Audiences: Or, What is the Audience Researcher to do in the Age of the Internet?" *European Journal of Communication* 19: 75-86.

———. 2008. "Taking Risky Opportunities in Youthful Content Creation: Teenagers' Use of Social Networking Sites for Intimacy, Privacy and Self-Expression." *New Media Society* 10 (3): 393-411.

Livingstone, Sonia, and Ellen Helsper. 2010. "Balancing Opportunities and Risks in Teenagers' Use of the Internet: The Role of Online Skills and Internet Self-efficacy." *New Media & Society* 12 (2): 309-29.

MacDonald, Jo-Ann, Anita J. Gagnon, Claudia Mitchell, Giuseppina Di Meglio, Janet E. Rennick, and Joseph Cox. 2011. "Include Them and They Will Tell You: Learnings from a Participatory Process with Youth." *Qualitative Health Research* 2 (8): 1127-35.

Marmot, Michael. 2007. "Achieving Health Equity: From Root Causes to Fair Outcomes." *Lancet 370* (9593): 1153-63.

Marx, Eva, Nancy Hudson, Tami B. Deal, Beth Pateman, and Kathleen Middleton. 2007. "Promoting Health Literacy through the Health Education Assessment Project." *Journal of School Health* 77 (4): 157-63.

McAllister, Elan. 2008. "Transparency in Maternity Care: Empowering Women to Make Educated Choices." *Journal of Perinatal Education* 17 (4): 8-11.

McCool, Judith P., Linda D. Cameron, and Keith Petrie. 2005. "The Influence of Smoking Imagery on the Smoking Intentions of Young People: Testing a Media Interpretation Model." *Journal of Adolescent Health* 36 (6): 475-85.

McCreary Centre Society. 2006. "Building Resilience in Vulnerable Youth." https://login.ezproxy.library.uvic.ca/login?url=http://site.ebrary.com/lib/uvic/docDetail.action?docID=10398112.

McNeil, John D. 1990. *Curriculum* (4th ed.). New York: HarperCollins.

Mihailidis, Paul. 2009. "The First Step is the Hardest: Finding Connections in Media Literacy Education." *Journal of Media Literacy Education* 1 (1): 53-67.

Mihailidis, Paul. 2011. "New Civic Voices and the Emerging Media Literacy Landscape." Journal of Media Literacy Education 3 (1): 4-5.

Mogford, Elizabeth, Linn Gould, and Andra Devoght. 2011. "Teaching Critical Health Literacy in the U.S. as a Means to Action on the Social Determinants of Health." *Health Promotion International* 26 (1): 4-13.

Morrell, Ernest. 2002. "Toward a Critical Pedagogy of Popular Culture: Literacy Development among Urban Youth." *Journal of Adolescent and Adult Literacy* 46 (1): 72-7.

Murphy, Peggy W., Terry C. Davis, Sandra W. Long, Robert H. Jackson, and Barbara Decker. 1993. "Rapid

Estimate of Adult Literacy in Medicine (REALM): A Quick Reading Test for Patients." *Journal of Reading* 37 (2): 124-30.

Norman, Cameron D., and Harvey A. Skinner. 2006. "eHEALS: The eHealth Literacy Scale." *Journal of Medical Internet Research* 8 (4): e27.

Nutbeam, Don. 2000. "Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century." *Health Promotion International* 15 (3): 259-67.

Nutbeam, Don. 2008. "The Evolving Concept of Health Literacy." *Social Science & Medicine* 67: 2072-78.

Ogden, Cynthia L., Margaret D. Carroll, Brian K. Kit, and Katherine M. Flegal. 2012. "Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999-2010." *Journal of the American Medical Association* 307 (5): 483-90.

Paakkari, Leena and Olli Paakkari. 2012. "Health Literacy as a Learning Outcome in Schools." *Health Education* 112 (2): 133-52.

Parker, Ruth M., David W. Baker, Mark V. Williams, and Joanne R. Nurss. 1995. "The Test of Functional Health Literacy in Adults: A New Instrument for Measuring Patients' Literacy Skills." *Journal of General Internal Medicine* 10 (10): 537-41.

Peerson, Anita, and Margo Saunders. 2009. "Health Literacy Revisited: What Do We Mean and Why Does it Matter?" *Health Promotion International* 24 (3): 285-96.

Peattie, Sue. 2007. "The Internet as a Medium for Communicating with Teenagers." *Social Marketing Quarterly* XIII (2): 21-46.

Pietilainen, Kirsi H., Jaakko Kaprio, Patrik Borg, Guy Plasqui, Hannele Yki-Jarvinen, Urho M. Kujala, Richard J. Rose, Klaas Westererp, and Aila Rissanen. 2008. "Physical Inactivity and Obesity: A Vicious Circle." *Obesity* 16 (2): 409-14.

Prensky, Marc. 2001. "Digital Natives, Digital Immigrants." http://www.marcprensky.com/writing/.

Primack, Brian A., Melanie A. Gold, Galen E. Switzer, Renee Hobbs, Stephanie R. Land, and Michael J. Fine. 2006. "Development and Validation of a Smoking Media Literacy Scale." *Archives of Pediatric and Adolescent Medicine* 160: 369–74.

Porr, Caroline, Jane Drummond, and Solina Richter. 2006. "Health Literacy as an Empowerment Tool for Low-Income Mothers." *Family and Community Health* 29 (4): 328-35.

Poyntz, Stuart R. 2006. "Independent Media, Youth Agency, and the Promise of Media Education." *Canadian Journal of Education* 29 (1): 154-75.

Ratzan, Scott. 2001. "Health Literacy: Communication for the Public Good." *Health Promotion International* 16 (2): 207–14.

Rideout, Victoria J., Donald F. Roberts, and Ulla G. Foehr. 2005. *Generation M2: Media in the lives of 8-18- Year-Olds*. A Kaiser Family Foundation Study.

Rodgers, Beth L. 1993. "Concept Analysis: An Evolutionary View." In *Concept Development in Nursing: Foundations, Techniques and Applications*, edited by Beth L. Rodgers and Kathleen A. Knafl, 73-92, Philadelphia, PA: W.B. Saunders.

Rodgers, Rachel F., Susan J. Paxton, and Henri Chabrol. 2010. "Depression as a Moderator of Sociocultural Influences on Eating Disorder Symptoms in Adolescent Females and Males." *Journal of Youth and Adolescence* 39 (4): 393-402. doi:10.1007/s10964-009-9431-y

Rogow Faith. 2004. "Shifting from Media to Literacy: One Opinion on the Challenges of Media Literacy Education." *American Behavioral Scientist* 48 (1): 30-34.

———. 2011. "Ask, Don't Tell: Pedagogy for Media Literacy Education in the Next Decade." *Journal of Media Literacy Education* 3 (1): 16-22.

Rootman, Irving. 2005. "Literacy and Human Health: The Role of Education." *Education Canada* 45 (1): 39-41.

Rudd, Rima E. 2007. "Health Literacy Skills of US Adults." *American Journal of Health Behavior* 31, (S1): S8-S18.

Ruiz, J.R., Francisco B. Orgtega, David Martinez-Gomez, Idoia Labayen, Luis A. Moreno, Ilse De Bourdeaudhuij et al. 2011. "Objectively Measured Physical Activity and Sedentary Time in European Adolescents: the HELENA study." *American Journal of Epidemiology Advance Access*. DOI: 10.1093/aje/kwr068.

Scharrer, Erica. 2002. "Making a Case for Media Literacy in the Curriculum: Outcomes and Assessment." *Journal of Adolescent and Adult Literacy* 46 (4): 354-58.

Schwartz-Barcott, Donna, and Suzie Kim Hesook. 1993. "An Expansion and Elaboration of the Hybrid Model of Concept Development." In *Concept Development in Nursing. Foundations, Techniques and Applications*, edited by Beth L. Rodgers and Kathleen A. Knafl, 107-134 Philadelphia, PA: W.B. Saunders.

Sharif, Iman and Arthur E. Blank. 2010. "Relationship Between Child Health Literacy and Body Mass Index in Overweight Children." *Patient Education and Counseling* 79: 43-48.

Shields, Margot. 2005. "Measured Obesity: Overweight Canadian Children and Adolescents." Ottawa: Statistics Canada, Report No.: 82-620-MWE2005001.

Shields, Margot, and Mark S.Tremblay. 2010. "Canadian Childhood Obesity Estimates Based on WHO, IOTF and CDC Cut-points." *International Journal of Pediatric Obesity* 5 (3): 265-73.

Sorensen, Kristine, Stephan Van Den Broucke, James Fullam, Gerardine Doyle, Jurgen Pelikan, Zofia Slonska, Helmut Brand and European Health Literacy Project Consortium. 2012. "Health Literacy and Public Health: A Systematic Review and Integration of Definitions and Models." *BMC Public Health* 12(80).

Starkey, Linda Jacobs, Louise Johnson-Down, and Katherine Gray-Donald. 2001. "Food Habits of Canadians: Comparison of Intakes in Adults and Adolescents to Canada's Food Guide to Healthy Eating." *Canadian Journal of Dietetic Practice and Research* 62 (2): 61-69.

Statistics Canada. 2007. "Study: Using the Internet for Education Purposes." http://www.statcan.ca/Daily/ English/071030/d071030b.htm.

Stern, Susannah R. 2005. "Messages from Teens on the Big Screen: Smoking, Drinking, and Drug Use in Teen-Centered Films." *Journal of Health Communication* 10: 331-46.

Strasburger, Victor C., Amy B. Jordan, and Ed Donnerstein. 2010. "Health Effects of Media on Children and Adolescents." *Pediatrics* 125 (4): 756-67

Summerlin-Long, Shelley K., Adam O. Goldstein, James Davis, and Vandana Shah. 2009. "Promoting Tobacco-free School Policies through a Statewide Media Campaign." *Journal of School Health* 79 (4): 184-92.

Sun, Fan-Ko. 2011. "A Concept Analysis of Suicidal Behavior." *Public Health Nursing* 28 (5): 458-68. doi: 10.1111/j.1525-1446.2011.00939.x

Tarver, Talicia. 2009. "Promoting eHealth Literacy: Where Does the Public Library Stand?" *Louisiana Libraries* 71 (3): 3-8.

The, Natalie S., Chirayath Suchindran, Kari E. North, Barry M. Popkin, and Penny Gordon-Larsen. 2010. "Association of Adolescent Obesity With Risk of Severe Obesity in Adulthood." *Journal of the American Medical Association* 304 (18): 2042-47.

Tones, Keith. 2002. "Health Literacy: New Wine in Old Bottles." *Health Education Research* 17: 287–90.

Van Heertum, Richard, and Jeff Share. 2006. "A New Direction for Multiple Literacy Education." *McGill Journal of Education* 41 (3): 249-65.

Walker, Lorraine O., and Kay C. Avant. 1994. *Strategies for Theory Construction in Nursing*, 3rd edition. Norwalk, CT: Prentice Hall.

Wharf Higgins, Joan, Deborah Begoray, and Marjorie MacDonald. 2009. "A Social Ecological Conceptual Framework for Understanding Adolescent Health Literacy in the Health Education Classroom." *American Journal of Community Psychology* 44: 350–62.

Wills, Jane. 2009. "Health literacy: New Packaging

for Health Education or Radical Movement?" *International Journal of Public Health* 54 (1): 3-4.

Windle, Michael, Jo Anne Grunbaum, Marc Elliott, Susan R. Tortolero, Sandra Berry, Janice Gilliland, David E. Kanouse, Guy S. Parcel, Jan Wallander, Steve Kelder, Janet Collins, Lloyd Kolbe, and Mark Schuster. 2004. "Healthy Passages—a Multilevel, Multimethod Longitudinal Study of Adolescent Health." *American Journal of Preventive Medicine* 27 (2): 164-72.

Wu, Amery, Deborah Begoray, Marjorie MacDonald, Joan Wharf Higgins, Jim Frankish, Brenda Kwan, Winny Fung, and Irving Rootman. 2010. "Measuring Health Literacy of Canadian High School Students." *Health Promotion International* 25 (4): 444-52.

World Health Organization. (1986). Ottawa Charter for Health Promotion. Adopted at an International Conference on Health Promotion—The Move Towards a New Public Health (co-sponsored by the Canadian Public Health Association, Health and Welfare Canada, and the World Health Organization), Nov 17-21, Ottawa, Canada. http://www.who.int/hpr/ NPH/docs/ottawa_charter_hp.pdf

World Health Organization. 2008. "Ten Facts on Adolescent Health. "http://www.who.int/features/factfiles/adolescent_health/facts/en/index.html

Yeo, Lay See, Rebecca P. Ang, Wan Har Chong, and Vivien S. Huan. 2007. "Gender Differences in Adolescent Concerns and Emotional Well-being: Perceptions of Singaporean Adolescent Students." *The Journal of Genetic Psychology* 168 (1): 63–80.

Zarcadoolas, Christina, Andrew F. Pleasant, and David S. Greer. 2005. "Understanding Health Literacy: An Expanded Model." *Health Promotion International* 20 (2):195-203.