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Weight Management Information Overload Challenges in 2007 HINTS: Socioeconomic, Health Status & Behaviors Correlates

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Abstract

Online users search the internet to locate necessary information for long-term weight management. However, some become frustrated or feel overwhelmed by the different kinds of weight management information. This phenomenon is known as information overload. The study used 2007 Health Information National Trends Survey (HINTS) data to find that overweight people and older adults were more likely to report overweight information overload. Further, lower education levels, poor health conditions, feelings of sadness, health information received from friends, little confidence in their ability to find information, and not using complementary therapies were also significantly associated with information overload. In view of these findings, health care information vendors, policy makers, information specialists, and librarians could provide an effective way to deliver weight management information.

Keywords: weight management, information overload, health information, predictors of overload

Introduction

Being overweight is harmful to one's health, and obesity is one of the main causes of strokes and diseases such as diabetes reference needed for this statement.. The Center for Disease Control and Prevention (CDC) has declared that being overweight or obese is among the most pressing health challenges facing the U.S. today. According to the Centers for Disease Control and Prevention (CDC, 2012), more than one-third of adults (72 million) and 17% of children in the United States are obese. Obesity rates have doubled from 1980 to 2000 for adults and tripled for children. This demonstrates why being overweight or obese has become such a huge problem in the U.S. These issues are primarily caused by an over-intake of high-calorie, unhealthy foods and drinks and low levels of physical activity. The obesity problem has been identified as the battle to win by CDC. Progress is being made through the development of policies, online education portals (Putnam 2012; Hwang 2011), and intervention approaches to help health consumers make healthy food choices, improve nutrition, and increase physical activity (Bensley, Brusk, and Rivas 2010; Lewis et. al. 2011; Funk et. al. 2010; Smedberg 2010). As a result of the digital divide and a lack of education, many people are likely unaware of the social media, online education and motivation tools available as useful educational and informational resources (Park 2005; Lustria, Smith, and Hinnant 2011; Rhaman 2008). They may also have difficulty filtering large amounts of information from various less-conventional sources.

There are numerous online information resources about health and wellness, and it is becoming more common for people to attempt to self-diagnose or medicate themselves by utilizing these websites. In 2011 the Pew Internet & American Life Project reported that 80% of internet users look for health information online. People are feeling more confident, savvy and familiar with medical knowledge than in the past via online information (Fallows and Fox 2005).

Participants in overweight online communities (e.g. Fatosphere) feel more empowered to share health and wellness information and cope with weight-based stigma (Dickens et. al. 2011).

However, health providers and consumers who wish to quickly access and retrieve the right information from the internet face great challenges.. Information overload, or the receipt of too much information, seems to have become an everyday problem for information seekers. About 66% of U.S. adults believe that "*there are so many different messages about whether being overweight is harmful to one's health it is hard to know what weight one should maintain to be healthy*" (data from the 2007 Health Information National Trends). Information overload occurs when an individual has difficulty understanding an issue due to an overabundance of information that prohibits effective decision-making (Waddington, 1998). Information overload may transpire while browsing the internet, in everyday conversation, and in a work environment (Waddington, 1998). A number of contributing factors are related to information overload such as increased communication, globalization, deregulation, downsizing, and technology (Waddington 1998).

Information overloading is also related to the type of information a person seeks. For instance, it is especially common in people seeking information about cancer (Kim and Kwon 2010; Kim, Lustria, and Burke 2007). Other possible related factors could include socio-demographics (education level, annual income, and employment status), health status (general health, the likelihood of depression, and history of cancer), and health communication (attention to the media) (Kim, Lustria, and Burke 2007). When people are looking for information on a common health-related topic, such as improved weight management and overall health, information overload predictors could be unique depending on the user's socioeconomic status, health behaviors, and physical activity levels.

Information overload in overweight individuals might be more severe due in part to a stronger desire to find relevant weight reduction information. Several studies address the rationale for why individuals seek weight management information and what factors affect their information seeking behavior (Stern et. al. 2007; Glasofer et. al. 2007; Hankey, Leslie, and Lean 2002). Studies have shown that gender, ethnicity, psychosocial factors, and quality of life significantly contribute to overweight information seeking behavior (Stern et. al. 2007; Glasofer et. al. 2007). Information overload in overweight information seekers occurs for a variety of reasons. There is a great deal of discussion online, in newspapers, and in magazines about the disadvantages of being overweight therefore individuals are at greater risk of receiving inaccurate or misleading information. For example, many people were confused by the contradictory messages about what the word "overweight" really means (Boero 2007). Long-term personal weight management is particularly challenging when "obesity epidemic" information is delivered by public health organizations that emphasize personal responsibility and the need to be informed (Henderson et. al. 2009; Henwood et. al. 2010).

Little is known about the correlates of "overweight information overload." This hinders the process for policy makers and librarians to help users effectively obtain or deliver information regarding overweight or obesity prevention. This study is the first to report on the correlation between overweight information overload and factors like social demographics, health information seeking behaviors, health communication habits, available health services, and lifestyle. The findings will identify the correlates and help explain why people may have trouble seeking relevant information from the amount of information available from different sources. It should also reduce information overload by organizing and representing weight management information more effectively.

Research Data

This study used the 2007 Health Information National Trends (HINTS) Survey cross-sectional data collected either by telephone or postal mail (available at www.hints.gov). The survey asked hundreds of questions about health related information needs among adults in the USA. Participants in this study stated that: "*There are so many different messages about whether being overweight is harmful to one's health, it is hard to know what weight one should maintain to be healthy*." The responses were classified as "strongly agree," "somewhat agree," "somewhat disagree," and "strongly disagree." This variable was collapsed into two groups: those who reported "strongly agree" and "somewhat agree" (meaning they experienced overload), and those who indicated "strongly disagree" and "somewhat disagree." Of the 7,173 respondents, 3,862 were excluded due to missing samples. The remaining 3,311 respondents reported 65.86% of them suffering from information overload.

Socio-demographic Characteristics

The following socio-demographic variables were included in the analysis: age (18-34, 35-49, 50-64, 65-74, 75+); gender; marital status (married or other); education levels (<high school, high school graduate, some college, college graduate); race/ethnicity (Hispanic, non-Hispanic white, non-Hispanic black, other); annual family income (<$20,000, $20,000-$34,999, $35,000-$49,999, $50,000-$74,999, ≥$75,000); and employment status (employed, unemployed, homemaker, student, retired, disabled).

Health Communication

Health communication plays a critical role in receiving information from formal and informal sources. It is important to understand to what degree people trust such information. The

questions included: “In general, how much would you trust information about health or medical topics from a doctor or other health care professional?” Participants were asked to respond in a range from “a lot” to “not at all.” “In general, how much would you trust information about health or medical topics from family or friends?” The responses ranged from “a lot” to “not at all.” “Overall, how confident are you that you could get health-related advice or information if you needed it?” Participants were asked to respond in a range from “completely confident” to “not confident at all.”

Health Services

This study also included health service-related variables: health coverage (yes, no); use of unconventional therapies (“During the past 12 months, did you use any complementary, alternative, or unconventional therapies such as herbal supplements, acupuncture, chiropractic, homeopathy, meditation, yoga, or Tai Chi?”); and perceived quality of healthcare (“Overall, how would you rate the quality of healthcare you received in the last 12 months?”).

Health Status

Several questions related to health status, including: “During the past 30 days, how often did you feel so sad that nothing could cheer you up?”; “During the past 30 days, how often did you feel nervous?”; “In general, would you say your health is…” The participants were asked to respond “excellent,” “very good,” “good,” “fair,” or “poor.”

Physical Activity and Lifestyle

Exercise and lifestyle variables were also considered in this analysis. They included: regular exercises (“During the past month, did you participate in any physical activities or exercises such as running, yoga, golf, gardening, or walking for exercise?”); weight loss attempts (“Have you tried to lose any weight in the past 12 months?”); and weight perception (“Right

now, do you feel you are overweight, slightly overweight, underweight, slightly underweight or just about the right weight for you?").

This research aims to explore the characteristics of overweight information seekers who report overload and to identify the implications of these findings for information professionals using the 2007 National Trends Survey dataset. This study explored a series of factors including socio-demographics, health information seeking behaviors, health services, physical behaviors and lifestyles that might be correlated with individuals' perceptions of information overload. This study addressed the following research questions:

- What are the characteristics of people reporting overweight information overload challenges?

This question was investigated by analyzing the socio-economic statuses of the overweight information seekers.

- What factors are significantly associated with overload?

This question was investigated by analyzing the correlation between overload and the factors related to health communication, health service, health status, physical activity, and lifestyle.

Statistical Analysis

A series of Chi-squared tests were performed to determine significant correlation differences between overweight information overload and the following variables: socio-demographics, health communication, health services, health status, physical activity, and life style. Logistic regression analysis was used to identify which of these variables could

significantly predict the probability of overweight information overload. Data analysis was conducted using STATA 11 software (College Station, Texas, USA).

Results

The socio-demographics analysis indicated that the majority of the sample population was between 35-49 years of age (25%) and 50-64 years of age (34%). Most of the responders were female (62%). The majority of responders reported their race as non-Hispanic white (78%). About 40% of the respondents reported their educational status as college graduate, while 7% reported less than high school. 54% reported being employed, while 4% were unemployed, and 26% were retired. Annual household income status shows that 35% earned $75,000 or more, and 92% had health care coverage. Almost 61% of the respondents reported they were married. The percentages and chi-square analysis between the factors and overweight information overload are shown in Table 1. Information overload was found to be significantly related to age ($p < 0.0001$), race ($p < 0.0001$), marital status ($p < 0.0001$), education ($p < 0.0001$), annual income ($p < 0.0001$), and employment status ($p < 0.0001$). Individuals suffering from overload were more likely to be those over the age of 64 years, those who did not graduate from college, and those whose annual incomes were less than $50,000 (Table 1). Hispanics and non-Hispanic blacks were most likely to have overload challenges. In addition, individuals who were not married were more likely to report overload problems. Among the demographic variables, only gender was not significantly associated with overload. Thus overload was associated with demographic variables (age, race, and marital status) and socio-economic status (education, income, and employment status) (Table 1).

As for the health status-related variables, this study found that individuals who rated their health below 'very good' were more likely to suffer from overload ($p < 0.0001$). People who reported feeling sad and nervous most of the time were also more likely to have overload challenges. Therefore, overload was associated with health status through general health ($p < 0.0001$), the sensation of sadness ($p < 0.0001$), and the sensation of feeling nervous ($p = 0.022$).

Among the health communication variables, whether the individual reported trusting family and friends as a source of health information was significantly associated with overload ($p < 0.0001$). The level of confidence experienced when seeking health information was also significantly associated with overload ($p < 0.0001$). Individuals who reported putting a great deal of trust in health information provided by family or friends were more likely to report overload problems. People who reported feeling below the 'very confident' level when finding health information were likely to have challenges of overload. However, the variable of whether they 'trust health information from doctors' was not significantly associated with overload.

The variables of health service significantly associated with overload were use of complementary therapies ($p < 0.0001$) and healthcare coverage ($p = 0.001$). Those who did not use any complementary, alternative, or unconventional therapies were more likely to experience difficulties in finding information. Also, people who did not have health insurance coverage were also more likely to have overload problems. How responders rated the quality of received healthcare showed no significant association with overload.

Among physical activity and lifestyle variables, two variables showed significant association with overload. People who did not participate in any physical activities were more likely to have overload ($p < 0.0001$). Also, individuals who regarded themselves as 'overweight'

were likely to have information overload ($p < 0.0001$). However, individuals indicating that they were 'trying to lose weight' showed no significant association with overload.

The results of the logistic regression analysis showed that most of the factors could significantly function as predictors of overload. Summaries of the significantly associated factors are shown in Table 2. Among demographics factors, individuals who were older aged and had attained a lower level of education were more likely to report overload. Regarding health status factors, people who reported poor health and sensations of sadness were more likely to suffer from overload. Concerning health communication factors, this study revealed that respondents who trusted information from friends and felt less confident in their ability to find information were more likely to report overload. Among health service factors, the results showed that people who did not use any complementary, alternative, or unconventional therapies and received poor healthcare were more likely to report overload. As for physical activity levels and lifestyle, people who saw themselves as overweight were more likely to have overload challenges.

Discussion

Information overload plays a major role in modern-day societies. Other research studies discovered that certain demographic variables were significantly associated with information overload, including gender (female) and age (older adults) (Stern et. al. 2007). However, in this particular study gender was not associated with overweight information overload. One way this differing outcome might be explained is that the percentage of participating obese in males and females in this study were approximately the same (Cameron et. al. 2010). Thus both genders were perhaps searching for weight management information just as frequently, so that both might

suffer from similar amounts of overload. On the other hand, this study found that age was significantly associated with information overload. Individuals above the age of 64 years were more likely to suffer from overload. Results from other studies indicate that individuals with higher income, higher education levels, and who were employed, were less likely to report information overload (Kim, Lustria, and Burke 2007). Findings from this study indicated that annual income and employment status were correlated with overload but were not predictors. This might be due to the fact that lower income families and the unemployed receive government-sponsored subsidies such as food stamps. A study showed that low-income families and the unemployed who receive food stamps were more likely to purchase non-nutritious food as the price of healthy food is higher (Dammann and Smith 2009).

This study showed that those with higher attained education were less likely to experience information overload. This is consistent with other findings that suggest the digital divide and a lack of education might prevent individuals from being aware of social media applications for the overweight, online education, and motivation tools. (Lustria, Smith, and Hinnant 2011; Rhaman 2008). Decreasing language barriers, increasing information literacy and computer skills could also help reduce the burden of the information overload (Stern et al., 2007).

As for the health status variables, the findings showed people who were reportedly less healthy were more likely to have overload problems. This finding is also consistent with the previous research regarding cancer sufferers who experience information overload (Rhaman 2008). Depression, anxiety, mood levels, and stress have been identified as having a significant association with difficulty in processing incongruent information (Braun-LaTour, Puccinelli, and Mast 2007). People with positive moods tend to have more productive thinking than those with

negative moods (Moore and Isen 1990). Therefore individuals who experience depression, negative moods, and stress are more likely to suffer from information overload. This supports our findings that people who often reported feeling sad were frequently experiencing overweight information overload.

Many people may have trouble evaluating the quality of the information or have difficulty understanding the information itself. Those with higher education levels were more confident in their ability to comprehend information and less likely to experience an overload of information (Arora et. al. 2007; Huang, Chan, and Dong 2012). The results from the authors' research study corroborated these findings and showed that individuals who were confident in their information seeking abilities were less likely to face overload challenges.

The ability to trust information is extremely important for people who are making decisions. The percentage of people who trust health information from doctors was higher than those who trust information from any other source (Nguyen and Bellamy 2006). The findings revealed that 72% of participants relied on health information from doctors, which is more than those who trust information from family and friends. Those who trust health information from doctors did not have information overload problems as often in this study. One explanation is that doctors are professional advisers and that patients often discuss weight issues with them. Previous research showed that 72% of physicians reported they regularly discuss weight management with their patients and 84% reported that patients felt comfortable discussing weight problems with them (Greiner et. al. 2008).

However, trusting health information from family and friends was more often associated with information overload. Many individuals, especially adolescent boys and girls, are under pressure to be thin from family, dating partners, or the media (Presnell, Bearman, and Stice

2004). As a result, they might experience stress and discuss weight with their family and friends. Therefore they might receive too much information and suffer from overload. Given the increasing incidence of obesity being characterized as an 'epidemic,' it is not surprising that many people believe there are contradictory claims about what being 'overweight' actually means (Boero 2007). People suffering from overweight information overload normally had difficulty determining what information they could trust. It will be important to consider other psychosocial variables, such as health literacy confidence, that might help individuals understand weight information by interpreting quantitative measurements like Body Mass Index (BMI) (Huang, Chan, Dong 2012).

Regarding health services, this study found that those who used complementary, alternative, or unconventional therapies were less likely to suffer from overload. One reason for this could be that the use of complementary and alternative therapies is effective treatment for anxiety and depression. Nine out of every ten patients who have self-defined anxiety attacks use some type of complementary and alternative therapy to reduce their anxiety (Kessler et. al. 2001; Chan, Huang, and Hong 2012). Previous research, as well as the authors' findings, showed that people with less depression, anxiety, stress, and feelings of sadness, were less likely to suffer overload(Braun-LaTour, Puccinelli, and Mast 2007; Moore and Isen 1990).

On the subject of physical activity and lifestyle, the findings showed that people who identified themselves as overweight had a higher likelihood of having overload challenges. It was determined that the overweight and obese are more likely to follow-up when using web-based behavior change programs than people of normal body weight (Verheijden et. al. 2007). They tend to care more about overweight information than others. On the other hand, participation in any physical activity was correlated with overload but not necessarily a predictor.

One possible explanation for this could be that participation in physical activities was not necessarily related to weight problems. Regular exercise has been related to a more favorable body shape and structure in peoples' minds (Kirkcaldy, Shephard, and Siefen 2002). However, the relationship between physical activities and perceptions of overload still needs further exploration.

The findings identified factors that can improve information resources for weight management. Public health messages emphasize personal responsibility and the need to be health informed about the obesity "epidemic." (Kim and Kwon 2010; Kim, Lustria, and Burke 2007). Given that certain factors might correlate with information overloading, the suggested improvements must incorporate the identified factors collected from the National Trends Survey that may act as predictors of information overload. These predictors include factors related to socio-demographics, health communication, health status, and physical activities. The study showed that overweight information overload is one of the barriers to information seeking for consumers, is related to health consumers' perception of whom to trust, and affects their ability to access the right health information (Kim and Kwon 2010; Johnson 1997).

This study had several limitations. It included quite a few socio-demographic and health communication factors that were found to be related to overweight information overload, but there are certainly other factors such as access to overweight information sources and channels that were not included due to data constraints. In addition, this research assessed respondents' subjective overload perceptions without investigating objective assessments. For example, measurable time pressure that required for a certain information seeking task could be related to information overload. Furthermore, the 2007 HINTS survey did not include variables related to information cost or consumers' reactions to the overload. The future research will extend to

investigate objective overload levels, since individuals might estimate their overload higher or lower, and explore the different ways these variables can be used to help overcome the challenge of information overload. Therefore, health professionals could design specific intervention strategies for users in order to minimize the adverse effects of information overload. Despite these limitations, the findings from this study used a national representative sample to highlight a series of factors correlated with overweight information overload in the context of health information seeking.

Conclusion

This study examined socio-demographic, health communication, health service, health status, physical activity, and lifestyle characteristics associated with overweight information overload using HINTS data. Our findings revealed that individuals of an older age and lower attained education level were more likely to report overload. Additionally, individuals who reported poor health and those who often feel sad were also frustrated with overload. Conversely, those who trust health information from family or friends less often and those who have confidence in their ability to find information were less likely to report experienced overload. People who use complementary, alternative, or unconventional therapies, and they were not overweight were less likely to suffer from overload. The information overload challenge is information content-specific. For example, overweight information seekers showed dissimilar social characteristics and health behaviors (e.g., physical activity) as cancer information seekers do. Understanding the characteristics of individuals with overweight information overload challenges enables us to develop user-specific, tailor-made online web portals or online

information resources that are designed to reduce the potential information overload for the these at-risk users. Thus, health information professionals should define policies for information creation and intervention strategies, and provide an effective way to deliver nutrition recommendations and high quality information to the overweight community.

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Table I: Characteristics of health information seekers with overweight information overload and without the overload

Variables	Non-Overweight Information Overload (%)	Overweight Information Overload (%)	Chi-square P-value
Demographics & Socio-Economic Status			
Age			< 0.0001
18-34	17.25	13.39	
35-49	28.73	22.67	
50-64	35.78	33.45	
65-74	11.95	16.65	
75+	6.29	13.84	
Gender			0.711
Male	38.46	37.93	
Female	61.54	62.07	
Race			< 0.0001
Hispanic	6.59	8.4	
Non-hispanic white	81.29	75.97	
Non-hispanic black	7.28	9.82	
Others	4.84	5.8	
Marital status			< 0.0001
Married	64.74	58.81	
Single	35.26	41.19	
Education			< 0.0001
Less than high school	3.9	9.01	
High school graduate	13.4	27.83	
Some college	27.51	31.67	
College graduate	55.19	31.49	
Annual income			< 0.0001
Less than $20,000	10.43	17.89	
$20,000 to < $35,000	10.66	18.65	
$35,000 to < $50,000	13.17	14.11	

$50,000 to < $75,000	20.51	19.49	
$75,000 or more	45.22	29.86	
Employment status			< 0.0001
Employed	62.53	50.23	
Unemployed	3.73	3.66	
Homemaker	8.62	8.31	
Student	3.15	2.51	
Retired	18.59	29.1	
Disabled	3.38	6.2	
Health status			
General Health			< 0.0001
Excellent	15.56	9.04	
Very good	40.21	36.05	
Good	32.11	36.75	
Fair	9.91	14.48	
Poor	2.21	3.69	
Negative Mood			< 0.0001
All of the time	0.41	1.39	
Most of the time	2.91	3.81	
Some of the time	9.73	15.11	
A little of the time	22.09	25.36	
None of the time	64.86	54.34	
Feel nervous			0.022
All of the time	1.05	2.12	
Most of the time	4.43	5.32	
Some of the time	22.9	22.24	
A little of the time	42.07	39.65	
None of the time	29.55	30.67	
Health Communication			
Trust health information from doctors			0.418
A lot	72.84	70.96	
Some	23.66	25.17	
A little	3.15	3.29	

Not at all	0.35	0.57	
Trust health information from family or friends			< 0.0001
A lot	10.26	14.35	
Some	50.47	49.92	
A little	34.38	29.28	
Not at all	4.9	6.44	
Confidence in finding information			< 0.0001
Completely confident	28.44	21.58	
Very confident	40.73	37.08	
Somewhat confident	24.77	31.43	
A little confident	4.9	6.98	
Not confident at all	1.17	2.93	
Health Services			
Health coverage of any type			0.001
Yes	93.76	91.18	
No	6.24	8.82	
Use complementary, alternative, or unconventional therapies			< 0.0001
Yes	33.92	25.87	
No	66.08	74.13	
Perceived general health			0.588
Excellent	34.67	34.81	
Very good	41.26	41.07	
Good	18.07	17.26	
Fair	4.9	5.23	
Poor	1.11	1.63	
Physical Activity and Life Style			
Tried to lose weight			0.579
Yes	59.44	58.63	
No	40.56	41.37	
Participate in any physical activities			< 0.0001
Yes	78.26	69.14	

No	21.74	30.86	
General Weight			< 0.0001
Overweight	30.59	33.03	
Slightly overweight	34.15	38.17	
Underweight	0.64	1.45	
Slightly underweight	2.8	2.69	
Just about the right	31.82	24.66	

Note: *p<0.05, **p<0.01. ***p<0.001

Table II: Logistic regression analysis of significant predictors of overweight information overload

Odds Ratios (95% Confidence Interval)	
Demographics & Socio-Economic Status	
Age	
18-34	1
35-49	1.04 (0.85, 1.28)
50-64	1.12 (0.91, 1.38)
65-74	1.51 (1.14, 2.01) **
75+	2.12 (1.52, 2.94) ***
Education	
Less than high school	1
High school graduate	1.06 (0.77, 1.47)
Some college	0.70 (0.51, 0.95) *
College graduate	0.39 (0.28, 0.54) ***
Health status	
General Health	
Excellent	1
Very good	1.35 (1.10, 1.66) **
Good	1.43 (1.15, 1.79) **
Fair	1.30 (0.98, 1.73)
Poor	1.15 (0.73, 1.82)
Negative Mood	
All of the time	1
Most of the time	0.45 (0.18, 1.13)
Some of the time	0.60 (0.25, 1.44)
A little of the time	0.48 (0.20, 1.16)

None of the time	0.38 (0.16, 0.90) *
Health Communication	
Trust health information from family or friends	
A lot	1
Some	0.76 (0.62, 0.93) **
A little	0.60 (0.48, 0.74) ***
Not at all	0.84 (0.60, 1.16)
Confidence in finding information	
Completely confident	1
Very confident	1.19 (1.01, 1.40) *
Somewhat confident	1.52 (1.27, 1.82) ***
A little confident	1.50 (1.11, 2.03) **
Not confident at all	2.32 (1.36, 3.95) **
Health Services	
Use complementary, alternative, or unconventional therapies	
Yes	1
No	1.23 (1.07, 1.42) **
Physical Activity and Life Style	
General Weight	
Overweight	1
Slightly overweight	1.21 (1.03, 1.42) *
Underweight	1.14 (0.67, 2.77)
Slightly underweight	0.94 (0.62, 1.42)
Just about the right	0.82 (0.68, 0.98) *

Note: *p<0.05, **p<0.01. ***p<0.001