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**The impact of online social participation on social capital and mental health outcomes of young adults: A systematic review & participation and quality of life of young adults living in Western Australia: Research report**

Robyn Earl  
*Edith Cowan University*

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**The Impact of Online Social Participation on Social Capital and  
Mental Health Outcomes of Young Adults: A Systematic Review.**

**&**

**Participation and Quality of Life of Young Adults Living in Western  
Australia: Research Report**

Robyn Earl

A report submitted in partial fulfilment of the requirements for the award of Bachelor  
of Occupational Therapy, Honours, Faculty of Computing, Health and Science.

Edith Cowan University

In Conjunction with  
Telethon Institute of Child Health Research

Submitted: October 2011

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**The Impact of Online Social Participation on Social Capital and  
Mental Health Outcomes of Young Adults: A Systematic Review.**

Robyn Earl

Edith Cowan University

In Conjunction with  
Telethon Institute of Child Health Research

## **Abstract**

**Introduction:** The widespread acceptance and availability of the Internet and subsequent advent of social networking sites, is believed, in part, to be responsible for the reduction of face-to-face interaction, particularly among young adults. This has led to suggestions that while virtual participation may enhance our ability to communicate with others; it may in fact come at the detriment of wellbeing. Depression is one of the leading causes of mental illness for young people, with social isolation and exclusion being identified as key risk factors for depression among this group. The aim of this review was to systematically review available research examining the relation between online social participation and the psychological wellbeing of young adults. **Methodology:** Electronic searches of five electronic databases (ERIC, PsycINFO, Scopus and Web of Science) were used to identify and locate studies for inclusion in this review. Each database was searched for studies conducted since 2000 to May 2011. **Results:** Seven articles met the inclusion criteria, with a total of 4 190 participants. Of the seven studies four were cross sectional surveys, two were non-experimental pre-test post-test studies and one was a longitudinal study. **Conclusion:** This review found significant evidence to suggest that greater time spent in online chat was associated with increased feelings of loneliness post social exclusion. Social networking sites were not found to facilitate strong bonds between individuals, but rather complement to face-to-face interaction. Social networking sites do potentially provide powerful networking tools that individuals can turn to in times of need.

**Key Words:** social capital, social network, Facebook, internet use, young adult, online and internet.

**Author:** Robyn Earl  
**Supervisors:** Dr. Sonya Girdler  
Ms. Kitty Foley  
Dr. Helen Leonard  
**Submitted:** October 2011

## **Introduction**

In recent years there has been a growing interest in what it is that allows individuals to create and maintain social relationships with others. This has in part been due to a significant shift in the mode of developing and maintaining social relationships. It has been suggested that the widespread acceptance and availability of the Internet and subsequent advent of social networking sites, is in part responsible for the reduction of face-to-face interaction and the increase in distance communication (1-4). This has led many researchers to suggest that while virtual participation may enhance our ability to communicate with others globally, it may in fact come at the detriment of wellbeing.

By far the biggest consumers of online social participation medias are young adults aged 18-34 (5). Young adults also have the highest prevalence of mental illness of any age group (6-8). Depression is one of the leading causes of mental illness for young people (8, 9), with social isolation and exclusion being identified as key risk factors for depression among this group (10). Socially anxious individuals with comorbid depression have an increased likelihood of recurrent depressive symptoms throughout their lives and are more likely to suicide (9). Further more, Cacioppo (2003) reported that socially isolated young adults had poorer physical health outcomes compared to their socially engaged peers which was shown to lead to further psychological stressors (11).

The importance of meaningful and intimate social relationships for young adults is widely recognised (12-15). However, many young adults find it challenging to make these meaningful connections with others for a number of reasons including distance,

disability, minority status, and personal preference. Early research examining the relationship between time spent online and mental health outcomes suggested that greater usage was associated with poorer psychological outcomes (1, 2). It was hypothesised that this relationship was the result of time being spent online at the expense of participation in meaningful social interactions with close friends and family, and the belief that on-line relationships were less emotionally satisfying and distant (1, 2, 16).

The quality of social relationships between individuals and groups is commonly referred to as social capital. Social capital is conceptualised as the resources that are invested into and produced by social networks, and their value for both individuals and groups (15-17). Two forms of social capital measure the social ties between individuals and informal groups. The first is bonding, which refers to the strong ties between individuals, such as family and close friends (16, 17). The second form is bridging, which refers to the weaker, but further reaching ties between individuals and groups, such as the ties between casual acquaintances and work associates (16, 17). The fear that many have expressed is that time spent on the Internet leads to a sacrifice of bonding social capital in favour of bridging, potentially resulting in less emotionally and psychologically satisfying social engagement (1, 2, 4, 15-17). It is argued that those individuals who have strong social ties with others are more able to turn to and rely on their peers in times of crisis than those with weaker, less familiar ties (1, 2, 4, 15-17). Social connectedness is believed to be particularly important during young adulthood as it is during this time that many major life events occur, which potentially lead to increased psychological distress (8, 10, 12-14). However, it has also been argued that online social participation may contribute to the

development and maintenance of meaningful relationships that would not otherwise be possible without Internet social forums (1-3).

As virtual social participation becomes an increasingly popular and integral part of mainstream culture, in parallel with increasing rates of depression and anxiety, many researchers have been lead to explore whether a link exists between the online social participation trends and the mental health of young adults. To date much of the data is conflicting as to whether online social participation indeed facilitates greater social capital and improved psychological wellbeing. Therefore, the aim of this review was to systematically review available research examining the relation between online social participation and the psychological wellbeing of young adults.

## **Methods**

Electronic searches of five electronic databases (ERIC, PsycINFO, Scopus and Web of Science) were used to identify and locate studies for inclusion in this review. Each database was searched for studies conducted since 2000 to May 2011. The key search terms were social capital, social network, Facebook, internet use, young adult, online and internet. Terms were truncated, exploded and adjusted to match the specific database being searched with the assistance of the librarian. Only published literature was accepted with no language, or study design restrictions. Reference lists of included studies were also reviewed manually for other relevant studies.

Studies were assessed for suitability initially by title and secondly by abstract. Articles were finally assessed for suitability based on review of full text articles. Studies were included if they described the type and degree of online social networking sites and the outcomes for young adults mental health.

### **Assessment of Methodological Quality**

Each study was assessed by two independent reviewers for quality using the form developed by Kmet et al. to evaluate the quality of quantitative studies (18). The checklist consists of 14 questions to assess the quality of included studies. Quality of the studies were defined using a calculated score; strong (>80%), good (70-80%), adequate (50-70%), or limited (<50%). Differences in scores between reviewers will be resolved through discussion and possible review by a third reviewer.

### **Data Extraction**

Data was extracted by two independent reviewers according to the methods laid out in section seven of the *Cochrane Handbook for Systematic Reviews of Interventions* (19). Data extracted included; study design, study objective, sample size, method of recruitment, characteristics of participants, outcomes, analytical methods, confounding controls, results and conclusion. Discrepancies in reviewers' findings were resolved via discussion.

### **Results**

Electronic searches located 43 articles from Scopus and 16 from Web of Science 1 from EBSCO. After accounting for duplicates a total of 51 titles were included for review. A further 33 articles were excluded on title and two others were excluded by abstract review. Full texts of the remaining 16 articles were reviewed for inclusion.

Of the 16 articles a total of seven met the inclusion criteria, reporting on social networking sites or instant online chat with a total of 4 190 participants. Of the seven studies four were cross sectional surveys, two were non-experimental pre-test post-test studies and one was a longitudinal study. In the cross sectional studies effect of

online chat on psychological wellbeing was reported in three (20-22). The fourth explored the relationship between online social participation using Facebook, on self-esteem and the generation of bridging social capital (23).

Included in the review were two non-experimental pre-test post-test studies. Feelings of social isolation and loneliness were induced in participants, in order to explore whether instant chat was able to alleviate or minimise these feelings in a young adult population (24, 25). The final study evaluated, longitudinally, the influence of Facebook on young adults' psychological wellbeing and social capital over a two-year period (26).

### **Quality of Studies**

Overall the methodological quality of the studies was found to be adequate to strong. The cross-sectional nature of four of the seven studies limited their overall quality; however, the researchers sought to control for confounding factors where possible (20-23). All of these researchers acknowledged that more rigorous experimental designs were required. The longitudinal study was of a very high quality study with the authors rigorously accounting for possible confounding factors (26). The pre-test post-test studies had strong methodological quality; however, they were limited in that they did not entirely account for confounding factors (24, 25).

### **Exposure/s**

The intention of this review was to explore the effect of two forms of online social participation; social networking sites and online chat. Five articles explored the effect of exposure to online chat participation. Three of the studies examined the relationship between online chat and social wellbeing, in particular levels of loneliness and social



anxiety (20-22). Two studies used a pre-test post-test design to examine whether online chat had a direct impact on alleviating psychological distress in young adults (24, 25). Two studies investigated the relationship between exposure to social networking sites (Facebook and Myspace) and life satisfaction (23, 26).

### **On-line Chat as an Intervention**

Two studies explored the degree to which online chat impacted on feelings of social isolation and loneliness. Gross (2009), used a control group who participated in solitary game play, while those allocated to the “chat” intervention group were assigned a chat partner who was of the opposite sex and unfamiliar to them. Hu (2009), explored the degree to which various activities alleviated mood loneliness. Participants were assigned to one of five situations; face to face chat, online chat, watching a video, doing homework, and doing nothing. Pre and post-test measures of loneliness were taken and the results were compared.

### **Outcomes**

Psychological wellbeing was the primary outcome examined in this review, with five of the seven studies reporting on the potential influence of online chat on this outcome. The pre-test post-test studies by Gross (2009) and Hu (2009), examined if online chat alleviated negative feelings, particularly loneliness and anxiety, associated with social exclusion in comparison to a control group (24, 25). Measures included the UCLA Loneliness Scale, the Social and Emotional Loneliness Scale for Adults. Both studies found that online chat did not alleviate the negative affects of social exclusion any more than face-to-face chat. Three cross-sectional surveys also reported on the potential influence of online chat on young adult mental health (20-22). These studies used a variety of tools to measure the participant’s loneliness,

social anxiety, self esteem, including the UCLA Loneliness Scale, the Social and Emotional Loneliness Scale for Adults.

The five studies that reported on the psychological outcomes of online chat had mixed results. Hu (2009) reported that online chat lead to increased feelings of loneliness (25). Gross (2009) however found that post social exclusion, participating in online chat with an unknown peer lead to a greater replenishment of self esteem than participating in solitary game play (24). However, for young adults, online chat did not lead to a reduction in the negative affective experiences associated with social exclusion (dysphoria, shame or anxiety) (24). Kang (2007), found that greater online chat was predictive of lower depression scores (27). However, Kang did not report the degree to which this was true for the young adults, as older generation users reported increased “happiness” in comparison to younger users (27). Conversely, Kang reported that online chat users with higher education had smaller social networks, experienced greater alienation and felt as though they had fewer people to rely on. Further more, those who spent greater time participating in online chat were reported to be less estranged from others (27). Moody (2001) found those who relied more on their online friendships reported higher levels of emotional loneliness, compared to those who relied more on their offline friendships (22). However, in the same study greater Internet use was associated with decreased social loneliness (22). Moody concluded that the impact of online social participation on emotional wellbeing is complex and highly variable (22).

Two studies investigated the potential relationship between social networking sites and psychological wellbeing (26, 28). Both studies measured psychological

wellbeing using the Satisfaction with Life Scale (29). Steinfield, Ellison, and Lampe (2008) used Rosenberg's Self Esteem Scale (30). Facebook use and intensity was measured by the tool developed by Ellison (31). Facebook use was found to have a positive influence on psychological wellbeing of young adults who did not place a high value on their online relationships, but rather viewed them as opportunities for future benefit such as job opportunities or "favours" (26). Those who placed a high value on their online relationships were more likely have lower self-esteem compared to others who did not (23, 26). Steinfield examined the relationship between social networking sites, self-esteem and bridging self capital. Facebook was reported to be an effective and potentially powerful means by which to build bridging social capital, allowing for easy maintenance of loose social ties between casual acquaintances. Collectively this research suggests that Facebook is a network of loose ties between individuals, which has positive psychological outcomes for those who *already* have high levels of civic engagement (26, 28).

**Table 1:** Description of Included Studies

StudyID	Study design n (participants), mean age (years)	Online Exposure (1=chat, 2=SNS)	Measure/s of well being	Outcome/s	Main Findings	Quality of internet use measure/s (Kmet et al. 2004)
Matsuba2006	Cross sectional n=203 20.5 (4.1)	1	UCLA Loneliness Scale v 3 Self-concept Clarity	Problematic Internet use (PIU) symptoms positively related to communication $r=0.50$ , $p<0.001$  Those individuals who had online relationships had more PIU symptoms ( $M=3.22$ , $SD=2.62$ ) than those who had no online relationships ( $M=1.36$ , $SD=1.78$ )	Loneliness was positively associated with chat room use  PIU symptoms were positively associated with online chat room use and instant messaging.	86.36%
Gross2009	pre-test post test n=60 18.4 (0.9)	1	Question "how are you feeling now?"  21 item asking about emotions	Online chat improved self-esteem in young adults $p<0.05$ .  Online chat alleviated feelings of dysphoria, $p<0.01$ , shame, $p<0.01$ and anger, $p<0.01$ .	Instant chat facilitated greater replenishment of self-esteem post social exclusion but did not alleviate all the negative affects of social isolation in young adults.	80.77%

Hu2009	pre-test post test n=234 21.50 (1.80)	1	UCLA Loneliness Scale v 3 Social and emotional loneliness scale for adults	<p>There was difference between the computer mediated communication (CMC) in reducing loneliness <math>p &gt; 0.05</math></p> <p>Increase mood loneliness was experienced after CMC <math>p &lt; 0.05</math></p> <p>No significance between social versus non-social activities in reducing mood loneliness for people with either high or low trait loneliness (HTL:F(1, 57)=0.00, <math>p &gt; 0.05</math>; LTL:F(1, 51)=0.33, <math>p &gt; 0.05</math>)</p> <p>For participants with low trait loneliness (LTL) there was no significant difference btw F-t-f and CMC <math>F(1,28)=0.02</math> <math>p &gt; 0.05</math></p> <p>For participants with HTL f-t-f reduced mood loneliness (-0.04, SD=0.20)</p> <p>CMC increased mood loneliness (0.12, SD=0.20) post social exclusion</p>	<p>Computer mediated communication (online chat) does not alleviate loneliness.</p> <p>For individuals predisposed to feelings of loneliness online chat potentially increases feelings of loneliness compared to face-to-face communication. Face to face communication reduced feelings of loneliness in predisposed participants.</p>	87.50%
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Mazalin2004	cross sectional n=161 19.13 (1.70)	1	Extended Objective Measure of Ego Identity Status	<p><b>Correlation between online chat room use and;</b> Loneliness <math>p &lt; 0.05</math> Pathological Internet use symptoms (PUI) <math>p &lt; 0.01</math> Self-concept clarity (SCC) <math>p &gt; 0.05</math></p>	Face-to-face relationships were rated to be of greater importance and value than online ones.	77.27%
			Liebowitz Social Anxiety Scale: Self report version	<p><b>Correlation between online instant messaging use and;</b> Loneliness <math>p &gt; 0.05</math> Pathological Internet use symptoms (PUI) <math>p &lt; 0.01</math> Self-concept clarity (SCC) <math>p &lt; 0.05</math></p>	Online chat whether with an individual or group was related to increase feelings of loneliness.	
				<p><b>Correlation between interacting with strangers online and;</b> Self-concept clarity (SCC) <math>p &lt; 0.05</math></p>	Participants with poor identity development are more likely to use the internet for a variety of uses including online chat.	
				<p><b>Correlation between interacting with strangers online and;</b> Self-concept clarity (SCC) <math>p &lt; 0.05</math></p>	Participants who were very lonely were more likely to use the internet to meet and interact with people than those who were not.	
				<p><b>P scores for real-life versus online friendship quality dimensions</b> Companionship <math>p &lt; 0.01</math> Instrumental aid <math>p &lt; 0.01</math> Satisfaction <math>p &lt; 0.01</math> Intimacy <math>p &lt; 0.01</math> Nurture <math>p &lt; 0.01</math> Affection <math>p &lt; 0.01</math> Reliable alliance <math>p &lt; 0.01</math></p>	Participants with a less developed sense of self were more likely to use online chat. As well as this they were more likely to have multiple online personas suggesting that they were more likely to use the Internet to “experiment” with different “versions” of themselves in order to better establish a sense of identity.	
Moody2001	cross sectional, 166, 19.2	1	Social and emotional loneliness scale for adults	Large f-t-f network was associated with lower social loneliness $p < 0.0001$ and lower emotional loneliness $p = 0.0016$	High levels of Internet use were associated with low levels of social loneliness and high levels of emotional loneliness.	63.64%
			Social Anxiety Subscale of the Self Consciousness	Those who relied more on online friends had greater levels of emotional loneliness $p = 0.0370$	Low levels of social and emotional loneliness were both associated with high degrees of f-t-f networks of	

			Scale		friends.	
Steinfeild2008	longitudinal study n=763	2	Rosenberg Self-Esteem Scale (30) Satisfaction with life scale (29)	Significance was not reached for correlations between social anxiety identity status and Internet use for females. <b>Correlation between social anxiety, identity status and Internet use for males</b> Social Anxiety and online chat $p < 0.01$ Online chat and poor identity development (diffusion or foreclosure) $p < 0.01$	Males who reported higher levels of social anxiety and less mature identity development were more likely to spend time in online chat rooms.	90.91%
				<b>Differences between Facebook members and non-members</b> Life satisfaction $t = -0.95$ , <i>n.s.</i> Social trust $t = 0.39$ , <i>n.s.</i> Civic Engagement $t = -6.31$ , $p < 0.001$	Positive relationships were found between intensity of Facebook use and participants' life satisfaction, social trust and civic engagement.	
Valenzuela2009	cross sectional n=2603 20.88 (0.88)	2	Satisfaction with life scale (29)	<b>Intensity of Facebook use as a predictor of:</b> Life Satisfaction $p < 0.001$ Social Trust $p < 0.001$ Civic participation $p < 0.001$ <b>Intensity of Facebook group use as a predictor of:</b> Civic participation $p < 0.05$	Small associations between Facebook variables and social capital suggests that social networking sites are not the most effective solution to youth social disengagement.	86.36%

## **Discussion**

### *Online Chat*

In summary this review found significant evidence to support the conclusion that greater time spent in online chat is associated with increased feelings of loneliness post social exclusion in those with a predisposition towards loneliness. Collectively research suggests that the online chat may be limited in its utility as an intervention for social exclusion and its negative effects. This finding highlights that there is a need for young adults to be more aware of the link between time spent on line participating socially and increased social anxiety and isolation, and as such should be promoted in the media and by health professionals. Young adults should be encouraged to actively participate in face-to-face, offline social interactions to ensure healthy psychological wellbeing.

This review is limited in the degree to which it can comment on the effectiveness of online chat on the psychological wellbeing of clinical populations of young adult's as studies were limited to non-clinical sample groups. Future research should examine the effectiveness of online chat as an intervention for alleviating social isolation and anxiety in clinical populations.

It is also important to note the findings by Kang (2007), who reported that those of higher education were more likely to have poor outcomes in regards to social alienation. This suggests that findings from current research may be limited as a result of the tendency for researchers to recruit samples from universities and colleges. Kang's suggestion that education may be a confounding variable that should



be considered in future research examining the effectiveness of online chat in alleviating loneliness, social isolation and anxiety.

Alternatively, the negative psychological outcomes associated with online chat use may be as a result of the displacement of time spent “offline” creating strong social ties, or bonding social capital. This displacement of strong social ties in favour of weaker ties may potentially lead to decreased wellbeing and greater social isolation (2, 3, 16, 26, 28, 31). Putnam, suggested as individuals make time for new technologies in their lives, time spent participating in society is ultimately decreased (16). This is further supported by Matsuba, 2006, who found a relationship between time spent online, loneliness and problematic Internet use (20). Additionally, those who place a high value on their online relationships are more likely to experience feelings of loneliness and have poorer identity development (21). These results further support the notion that health professionals should encourage young adults to actively make time to socially participate offline. Particularly those who are presenting with increased mood loneliness and potential early/ mild signs of depression.

### *Social Networking Sites*

The review also found that online social networking sites do not necessarily facilitate strong bonds between individuals, but rather provide a complement to face-to-face interaction. Social networking sites do potentially provide powerful networking tools that individuals can turn to in times of need. However, it is important to note that those who benefit the greatest from social networking sites are those who are already highly socially engaged. As social networking sites become a more entrenched part of social culture it is important that individuals continue to maintain strong social ties

beyond the virtual realm so as to maintain their psychological wellbeing. These findings suggest that social networking sites may complement interventions addressing the effects of social isolation/ anxiety however should not take the place of face-to-face interaction.

More research is needed to further understand the impact of new technologies on the psychological well being of adults over time. This review showed that mode of online participation and time spent participating online were factors in determining psychological outcomes of young adults. Those who rely heavily on online participation had, on the whole, poorer psychological outcomes. Further more, the findings of the studies indicated mixed outcomes for those with mild psychological wellbeing concerns, further rigorous investigation with clinical and non-clinical populations is required before conclusions regarding the potential impact of online chat for moderate to severe mental illnesses are made. Additional high quality research is required to investigate the impact of social networking sites on clinical populations, accounting for past and present online participation usage. Studies should also account for immediate effects on wellbeing versus long-term effects so as to account for the influence of social capital and potential growth over time. Finally, as the Internet becomes increasingly popular and relied on by mainstream culture further research should aim to tease out the links between psychological wellbeing, modes of online participation and the time young adults spend online so as to better identify those who are at risk of developing mental illness within our community both on and offline.

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**Participation and Quality of Life of Young Adults Living in Western  
Australia**

**Research Report**

Robyn Earl

Edith Cowan University

In Conjunction with  
Telethon Institute of Child Health Research

**Abstract**

**BACKGROUND:** Young adulthood is a time when individuals establish patterns of behaviour that have long-term effects on health and wellbeing. There is currently a paucity of normative data examining the role of the environment in shaping these patterns, in regards to participation, and the effect on quality of life. The International Classification of Functioning, Disability and Health was used to explore this relationship and to describe these elements as they relate to one another for a sample of typically developing young adults living in Western Australia.

**METHODOLOGY:** Paper based cross sectional surveys were used to collect data from participants from across Western Australia. **RESULTS:** 60 participants aged 18-30 years completed the surveys (n=60). Chi squared and Oneway ANOVA analysis was used to explore the relationships between individual contextual factors and quality of life (KidScreen), participation (Life-H) and quality of the environment (Measure of the Quality of Environment). Accommodation type was found to have a significant impact on young adult quality, with those still in the parental home reporting better Quality of life than those who were not ( $p=0.039$ ). Income also played an important role in determining young adult satisfaction with daily participation, particularly in relation to fitness ( $p=0.031$ ). **DISCUSSION:** This study found that the environment plays an important role in the lives of young adults. This is consistent with previous studies conducted outside of Western Australia.

**Author:** Robyn Earl  
**Supervisors:** Dr. Sonya Girdler  
Ms. Kitty Foley  
Dr. Helen Leonard  
**Submitted:** October 2011

## **Introduction**

### *Young Adulthood*

Throughout the transition from adolescence to young adulthood, individuals establish patterns of behaviour that have long-term effects on health and wellbeing (Arnett, 2000; Erikson, 1968; Kroger, Martinussen, & Marcia, 2010; Marcia, 1993). It is during this time that young adults begin the process of developing an occupationally based identity (Erikson, 1968). Erikson suggested that if an individual is unable to begin this process satisfactorily there is the potential for development of significant future mental health issues including behavioural concerns, personality and identity disorders (Erikson, 1968). Further more, it is important for young adults to form secure and intimate relationships with others, as this is a secondary method by which identity is further developed and refined (Erikson, 1968). However, since Erikson first presented his theory in the 1960s, there have been a number of significant shifts in social trends within Australia. These changes have resulted in the postponement of many young people achieving the traditional markers of adulthood.

The most significant shifts have been in relation to the education and employment rates of young adults (Australian Bureau of Statistics, 2005). In 2001, the Australian Bureau Statistics (ABS) reported that 23% of young adults were participating in higher education compared to 12% in 1976 (Australian Bureau of Statistics, 2005). This shift in educational trends is partly due to the significant increase of the participation of women in higher education (Australian Bureau of Statistics, 2005). In 2001, 43% of 20-29 year old women had a bachelor's degree compared to just 12% in 1976 (Australian Bureau of Statistics, 2005). Further more, recent decades have seen a significant increase in the rate of 20-29 year olds participating in the work force, with a 6% increase between 1976 and 2001 (75% to 81%) (Australian Bureau of Statistics, 2005). However, census reports have revealed divergent gender trends in relation to young adults engagement in the workforce (Australian Bureau of Statistics, 2005). In 1976, 57% of women (20-29 years) were working, compared to 75% in 2001. Conversely, rates of employment for males in their 20s dropped 5% between 1976 and 2001, with the greatest drop of participation being by males in their early to mid 20s (Australian Bureau of Statistics, 2005). This has paralleled the trend for young

males in this age group to participate in higher education after school rather than going straight in to the workforce. (Australian Bureau of Statistics, 2005). It is important that research examines the impact of these shifts and how they have impacted on young adults participation and attainment of important life milestones. The International Classification of Functioning, Disability and Health (ICF) provides a biopsychosocial framework by which researchers and clinicians may examine these changes and how they impact on outcomes such as quality of life.

#### *International Classification of Functioning, Disability and Health*

The ICF is the culmination of the shift in the approach to disability and functioning, driven by the civil rights movement of the 1960's (Madden & Australian Institute of Health and Welfare., 2003; Noonan, Kopek, Noreau, Singer, & Dvorak, 2009; Peterson, 2011). Its purpose is “to provide a unified and standard language and framework for the description of health and health related states” (World Health Organization., 2001, p. 3). ‘Disability’ and ‘functioning’ are defined as complex constructs of the interaction between body functions and structures, activities and participation, and environmental factors within the context of a health condition (see Appendix 1) (Madden & Australian Institute of Health and Welfare., 2003; Peterson, 2011; World Health Organization., 2001). The ICF has achieved a position of prominence in the field of rehabilitation as it is an effective model by which to analyse, illustrate and understand functioning and disability as they relate to health status (Huber, Sillick, & Skarakis-Doyle, 2010). The ICF was used in this research as the guiding framework.

#### *Participation*

According to the ICF, functioning and disability are the result of the complex interaction between the individual and their context (Madden & Australian Institute of Health and Welfare., 2003; Peterson, 2011; World Health Organization., 2001). An individual's ability to function is measured by their ability to participate in “life situations”. Participation is defined as “a person's involvement in life situations. [Representing] the societal perspective of functioning” (World Health Organization., 2001, p. 12). Colver (2009) argued that participation is the objective measure of functioning and along with quality of life, should be a key outcome for persons with

disability. This highlights that participation and its determinants is an outcome that should be further investigated in normative samples.

### *Education*

In an increasingly industrialised world the period for identity formation and development is being extended well into what is chronologically considered young adulthood (Arnett, 1997, 2000; Erikson, 1968). During this time, occupation forms the basis for identity development with participation in higher education providing the foundations for exploration into future occupations (Arnett, 1997, 2000; Erikson, 1968). Arnett (1997) in a study aimed at exploring what is was that young people felt marked the point of adulthood found that after financial independence from parents, completion of higher education was considered to be a significant marker of adulthood. Financial independence was also directly impacted by participation in higher education, with moving out of home coinciding with completion of study and the securing of more highly paid employment (Baum & Payea, 2004; Ross & Van Willigen, 1997). With young adults staying in education and subsequently in the parental home longer it is important that future research explore the impacts this has on the overall participation and quality life of young adults.

### *Work and Employment*

Work and employment play a crucial role in the identity development of young adults (Erikson, 1968; Sadock & Sadock, 2007). Occupation is the method by which many young people seek to define themselves and their status as an adult (Arnett, 1997). Arnett (1997), found that many young adults are moving away from the traditional markers that define the transition into adulthood, such as marriage and having children and redefining what it is that they believe makes one an adult. It was found that most young adults believe that to be an adult one must be financially independent from their parents and to have moved from the family home (Arnett, 1997). This allows us to infer that young adults value employment for its ability to provide financial stability. It also indicates an association between economic status and quality of life.

American research has reported a strong relationship between wellbeing and socio-economic status (Georgellis, Gregoriou, Healy, & Tsitsianis, 2008; Saarni, Saarni, & Saarni, 2008). Remunerative employment is linked to increased life satisfaction and

quality of life at both the individual and community level (Georgellis et al., 2008; Saarni et al., 2008). The importance of socioeconomic factors are also evident in the consistent finding that people in higher paid positions report higher quality of life (Baum & Payea, 2004; Georgellis et al., 2008; Ross & Van Willigen, 1997; Saarni et al., 2008). The present generation of young Australian adults are tending to stay in education longer than their predecessors and are therefore restricted in their ability to participate in employment and become financially independent from their parents (Australian Bureau of Statistics, 2005). To date there is no Western Australian research has investigated the association between quality of life and the delay in attaining these important life milestones.

#### *Community, Social and Civic Life*

Traditional avenues of participation in community, social and civic life are being replaced as young adults move into an increasingly virtual world. Concern has been raised in relation to changes in patterns of physical activity, with young adults leading more sedentary lives (Dunstan et al., 2010; Noreau & Boschen, 2010; van Ingen, 2008). These trends are reflected in the increasing rates of obesity across the Australian population (Obesity Working Group, 2009). The estimated number of persons who are either overweight or obese has increased from 4.6 million in 1989-90 to 7.4 million in 2004-05. This trend is of concern given that obesity has been identified as a significant risk factor for an array of life limiting illness, including type 2 diabetes, cardiovascular disease, osteoarthritis and cancer (Fontaine & Barofsky, 2001; Obesity Working Group, 2009). In the Australian context the overall cost of obesity and obesity related illnesses was estimated to be \$58.2 billion in 2008 alone (Obesity Working Group, 2009). Overweight and obese individuals also report decreased health related quality of life, often caused by their difficulty or inability to participate in day-to-day activities (Doll, Petersen, & Stewart-Brown, 2000; Finkelstein, 2000; Fontaine & Barofsky, 2001; Marchesini et al., 2000). It is therefore crucial that future research examines young adults participation and quality of life, particularly in relation to fitness activities.

#### *Environmental Factors*

The environment has a significant impact on the level of functioning and quality of life of an individual (Peterson, 2011). Environmental factors are those external to the individual and aspects include the physical environment, as well as, social and

cultural values, beliefs and attitudes (Peterson, 2011; World Health Organization., 2001). According to the ICF, decreased participation results from the negative interaction between the individual and their environment, whereas functioning is the result of a positive interaction (Colver, 2009; Noreau & Boschen, 2010; Peterson, 2011; World Health Organization., 2001). Considerable research has examined the effect of the environment on participation, however, these studies have tended to focus on clinical populations the findings from which may have limited relevance to normative populations (Anaby, Miller, Eng, Jarus, & Noreau, 2009; Colver, 2009; Giles-Corti & Donovan, 2002; Giles-Corti, Macintyre, Clarkson, Pikora, & Donovan, 2003; Noreau & Boschen, 2010; Wilson, Kirtland, Ainsworth, & Addy, 2004). Understanding environmental barriers and facilitators is difficult as they are intrinsically impacted upon by the capabilities of the individual (Noreau & Boschen, 2010). Research with normative samples would enable identification of global barriers to participation and those unique to clinical populations (Burchardt, 2004; Colver, 2009; Noreau & Boschen, 2010). Further normative studies would allow for description of those elements of the environment that facilitate functioning and how these are perceived to influence participation.

### *Quality of Life*

Quality of life is an individual's satisfaction with their level of functioning within their environment (Colver, 2009; Huber et al., 2010; Peterson, 2011), and it is a key outcome for people with disability (Huber et al., 2010; Peterson, 2011). Quality of life is a fundamentally personal construct, which has a reciprocal relationship with participation (Huber et al., 2010; Peterson, 2011). Huber and colleagues proposed that it is possible to place quality of life within the ICF framework under personal factors (Appendix 2) (Huber et al., 2010). Personal factors are currently under defined in the ICF framework and have been indentified by the World Health Organisation as a key area requiring expansion (Huber et al., 2010). The strong the link between quality of life, participation and the environment is extensively documented in relation to clinical populations further supporting the addition of quality of life to the ICF (Colver, 2009; Fontaine & Barofsky, 2001; Marchesini et al., 2000; Saarni, Saarni, & Saarni, 2008). However, the exploration of the link between these elements of the ICF in nonclinical populations is scarce. This study aimed to investigate the relationship between participation, quality of life and the environment



in the context of a normative sample of young adults. The research also aimed to identify the barriers that create barriers to participation and influence quality of life in this population.

### **Methodology**

A cross-sectional survey was used to describe participation and quality of life of young Western Australian adults. Ethics was obtained from the Edith Cowan University Human Research Ethics Committee.

#### *Participants*

Participants were limited to young adults aged 18 to 30 years of age living in Western Australia. Participants were recruited to complete a paper-based survey, from Universities, Tafes, sporting clubs, and the general community across Western Australia. Participants were also asked to help in the recruitment process by taking surveys to give to family and friends. Online recruitment utilised the social networking media Facebook to reach a culturally and geographically diverse population. Participants who responded were then sent surveys in the mail.

#### *Measures*

Data was collected using a 173 item survey. Items were categorised into seven sections; personal information, medical care, services and illnesses, education and employment, resources and income, young adult participation, environmental influences, and, young adult quality of life. The Assessment of Life Habits (LIFE-H) was used to collect information in relation to young adult's daily participation and satisfaction (Noreau, Fougeryrollas, & Vincent, 2002). The LIFE-H (short form) is a 69 item tool that has been found to have adequate to excellent convergent validity and inter-rater reliability ( $r=0.57-0.91$  and  $r=0.64-0.91$  respectively), excellent test-retest reliability and intraclass correlation coefficients (ICCs) that ranged from 0.80 to 0.95 (Figueiredo, Korner-Bitensky, Rochette, & Desrosiers, 2010). Questions were amended and two were removed, in order to make the survey culturally relevant to this population.

Environmental influences were reported using the Measure of the Quality of the Environment (MQE). The MQE measures the perceived effect of environmental

barriers and facilitators on social participation (Fougeyrollas, Noreau, St-Michel, & Boschen, 2008). The factors listed are grouped into six domains covering the taxonomy of the International Classification of Disability and Functioning (ICF) (Fougeyrollas et al., 2008).

Young adult quality of life was measured using the KidScreen-27. The Kidscreen-27 is one of the few health related quality of life questionnaires that recognises the increased importance of the socioeconomic context in determining quality of life (Ravens-Sieberer et al., 2007). It is made up of five Rasch scaled dimensions: physical wellbeing (5 items); psychological wellbeing (7 items); autonomy and parents (7 items); peers and social support (4 items); and, school environment (4 items) (Ravens-Sieberer et al., 2007). Ravens-Sieberer and colleagues (2007) examined the psychometric properties of the KIDSCREEN-27 and found that it had satisfactory construct validity in a study of n=22,827 young people (Ravens-Sieberer et al., 2007; Ravens-Sieberer et al., 2010).

## **Results**

### *Participants*

A total of 250 surveys were distributed, by paper copy (n=230) or email (n=20), to potential participants. Sixty surveys were returned (response fraction of 24%). The average age of participants was 22.7 years (SD=2.98) with 39 females (65%) and 21 males (35%). For analysis purposes participants were categorised into one of two groups according to age, 18-22 years (n=28) and 23-30 years (n=32). The sample was further examined according to income, accommodation type and whether or not they were still studying.

### *Education*

Of the 59 participants who reported on their education, 33 (55.9%) were still studying at some level. Of these, 20 (74.1%) were aged 18-22 years with 27 females and 16 males reporting they were still studying. A greater number of 18-22 year olds were studying compared to their older peers,  $\chi^2(1)=6.65$ ,  $p=0.01$ . Of the participants aged

18-22 year olds three quarters were studying (n=20, 74.8%). Of those participants who were still studying 87.88% were also working (n=29).

### *Employment & Income*

The majority of young adults in education were working casually (n= 18, 54.5%), compared to working in part-time (n= 10, 30.0%) or full-time work (n= 1, 3.0%). A larger proportion of those age 23-30 were in full time employment compared to their younger peers,  $\chi^2(5)=8.20$ ,  $p=0.15$ . The majority (n= 16, 76.2%) of young males were earning over \$18,199, while the majority (n= 23, 62.2%) of females were earning less than \$18, 199,  $\chi^2(1)=7.89$ ,  $p=0.005$ . A greater number (n= 22, 71.0%) of 23-30 year olds were earning over \$18,199 compared to 18-22 year olds,  $\chi^2(1)=9.88$ ,  $p=0.002$ .

### *Accommodation*

The majority (n= 39, 65.0%) of young adults were living in their parental home, as opposed to renting (n=15, 25.0%) or owning their own home (n=6, 10%), (n=39, 65%). All, bar one participant aged 18-22 years was living in their parental home (n=27, 96.4%).

### *Participation*

#### *Accomplishment*

The relationship between accomplishment and assistance of the 12 participation domains was explored in relation to contextual factors with no difference between males and females,  $F(1,58)=0.61$ ,  $p=0.44$ , nor between age groups,  $F(1,58)=0.23$ ,  $p=0.63$ . Participants reported that they had little to no difficulty completing tasks individually (M= 96.38, SD=9.32).

Income was found to have a significant relationship with young adult accomplishment of employment tasks ( $F(1,53)=5.93$ ,  $p=0.02$ ), with those earning higher incomes reporting increased accomplishment (M= 98.47, SD=6.43). The relationship between mobility and income approached significance ( $F(1,56)=3.22$ ,  $p=0.08$ ), with those earning over \$18,199 (M = 100, SD=0) reporting greater accomplishment of mobility tasks such as moving around outside the home and driving a vehicle, please refer to table 1 (Appendix 1).

### *Satisfaction*

Overall, young adults were satisfied to very satisfied with their ability to participate in daily activities ( $M = 93.34$ ,  $SD = 10.10$ ). Income was not a significant factor in predicting young adult overall satisfaction with daily tasks,  $F(1,53) = 2.09$ ,  $p = 0.1$ . However, those with greater income reported higher satisfaction with their ability to participate in communication ( $F(1,52) = 3.69$ ,  $p = 0.06$ ) and household ( $F(1,53) = 3.46$ ,  $p = 0.07$ ) tasks, please refer to table 2 (Appendix 2). Higher income earners also reported significantly higher satisfaction with their participation in fitness and relaxation activities ( $F(1,53) = 4.90$ ,  $p = 0.03$ ). Those with lower income reported higher satisfaction with education compared to their higher earning peers, ( $M = 96.00$ ,  $SD, 9.35$ ).

### *Environmental Influences*

On average, participants rated the environment as a minor facilitator to daily activity ( $M = 67.60$ ,  $SD = 10.60$ ). Females generally reported more environmental facilitators than males, though this difference was not significant ( $F(1,57) = 2.77$ ,  $p = 0.1$ ). More females than males rated support services as a facilitator to participation, ( $F(1, 54) = 4.37$ ,  $p = 0.04$ ). Females also rated social networks ( $F(1,56) = 3.32$ ,  $p = 0.07$ ) and commercial services ( $F(1,57) = 3.62$ ,  $p = 0.06$ ) as greater facilitators to participation when compared to males.

### *Quality of Life*

A higher score on the KIDSCREEN-27 indicated that the participant reported a better quality of life. Overall young adults reported a high quality of life with a mean score of 95.67 ( $SD = 14.52$ ). Males reported a higher quality of life than females though this difference was not significant ( $F(1, 58) = 1.05$ ,  $p = 0.31$ ). There was no difference between age group and quality of life ( $F(1,58) = 1.20$ ,  $p = 0.28$ ), however, 18-22 year olds ( $M = 97.88$ ,  $SD = 15.11$ ) reported a higher average quality of life than their older peers ( $M = 93.75$ ,  $SD = 13.95$ ). Also, those still living at home reported a greater overall quality of life than those living in a rental or owning their own home ( $F(2,58) = 3.60$ ,  $p = 0.03$ ), please refer to table 2 (Appendix 2).

## **Conclusion**

### *Discussion*

This research found that quality of life was significantly linked to both participation and the environment. This finding is consistent with Huber and colleagues' conclusion that quality of life should be a key outcome for all persons, whether they have a disability or not (Colver, 2009). Although this was a univariate relationship within a small sample size, it goes some way to further supporting Huber and colleagues (2010) in calling for the inclusion of quality of life in the International Classification of Functioning, Disability and Health (ICF). Further more these results highlight the importance of environmental factors in determining quality of life.

Interestingly this study found that 65% of young adults who participated in this study were still living in their parental home. This is congruent with national findings from the 2006 census data which indicated that the majority of young adults are staying at home longer than ever before (Australian Bureau of Statistics, 2005). This is important to note as many individuals identify leaving home as key marker of adulthood (Arnett, 1997, 2000). In the past young adulthood was the time when individuals separated their identity from their parents and a relationship of equals was established, with the movement away from the family home facilitating this shift (Erikson, 1968; Kroger et al., 2010). Failure to do this was associated with poor mental health and quality of life outcomes (Erikson, 1968; Kroger et al., 2010). However, in this study it was found that participants who were still living in the parental home in fact had higher quality of life scores. This is potentially because remaining at home, particularly while still studying, reduces the financial burden on the individual allowing them greater freedom to participate in daily activities of their choice.

Further more, personal income was found to have a significant or near significant impact on the satisfaction of young adults with their participation in daily activities. A number of international studies have found that increased socioeconomic status is associated with increased life satisfaction and quality of life (Baum & Payea, 2004; Georgellis, Gregoriou, Healy, & Tsitsianis, 2008; Ross & Van Willigen, 1997; Saarni et al., 2008). This suggests that having a greater income affords one the freedom of

opportunity to participate satisfactorily in meaningful occupations. For example a significant relationship was found between fitness participation and income.

Higher income earners were found to be more accomplished at, and have greater satisfaction with fitness activities. This is congruent with a vast number of studies that have consistently found that those of lower socioeconomic status do not participate in sufficient physical activity to be beneficial to their health (Bauman et al., 1996; Giles-Corti & Donovan, 2002; Giles-Corti et al., 2003; Wilson et al., 2004). Giles-Corti and colleagues (2002) found that those of lower socioeconomic status living in Perth, Western Australia, were less likely to participate in vigorous physical activity because they perceived their neighbourhood less attractive and socially supportive to cost free exercise options such as walking (Bauman, Smith, Stoker, Bellew, & Booth, 1999; Giles-Corti & Donovan, 2002; Giles-Corti et al., 2003). Further more, we found that those living with their parents were more likely to report greater satisfaction with fitness activities than those renting. This potentially because those living with their parents are living in higher socioeconomic areas compared to those renting. This may be because their parents are able to afford to live in these higher socioeconomic areas, where as many young adults are unable to afford to either buy or rent in these areas, such as along the coast. Coastal living has been shown to have a positive effect on physical activity, as there is greater access to scenic and safe walking environments (Bauman et al., 1999; Giles-Corti & Donovan, 2002; Giles-Corti et al., 2003). These findings, along with our own, suggest that health promotion should not only target the individual but also look towards making environmental changes that make low cost outdoor exercise options, such running and walking, appealing and safe for not only young adults by the community as a whole.

In interpreting the findings of this study, it is important to acknowledge that there were a number of limitations to this research. Firstly, the response fraction was 25% and limited with only 60 participants, and is only representative of a metropolitan sample. As rural populations have a different set of environmental influences and participation opportunities, we are not able to generalise this study to the young adult population of Western Australia as a whole.

Further more the length and complexity of the survey was another significant limitation of this study. On average it took participants approximately 30 minutes to complete and a number of participants reported that the wording of a number questions was confusing and difficult to understand. This did not lend itself to “on the spot” survey completion but rather required participants to take the survey with them to return or post back at a later date. The anonymous nature survey also meant that a vast majority of participants could not be followed up to remind them to complete and return their survey.

The mode of distribution and recruitment was also a limitation, ideally online survey completion would have allowed alerts and systems to be put in place that would have allowed for reminder messages to sent notifying participants that they have not yet completed or returned their surveys. Unfortunately copyright laws and licensing prevented this from taking place.

The information provided in this study provides a comparison point against which findings from clinical populations can be compared. This will enable both clinicians and researchers the opportunity to gain greater insight into where deficits in participation occur for these populations. Clinically this knowledge will support occupational therapist in identifying opportunities to facilitate greater participation of people living with disabilities. The focus of future study should be to examine the effectiveness of intervention targeted at improving ones satisfaction with how one participates in meaningful activities, making sure that everyone able to participate satisfactorily whether they have a disability or not. This will require continued focus on the means by which young adults are provided opportunities to participate in occupations and ensure that all individuals have the tools that they require to participate satisfactorily. Finally, both health professionals and policy makers should strive to promote the development of safe and appealing environments in lower socioeconomic areas so individuals feel that they can safely and affordably engage in fitness activities. This will hopefully not only improve the health of individuals but also the community as a whole.

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### **Appendix 1**

Figure 1: *International Classification of Functioning Disability and Health: Framework of Disability and Functioning*

### **Appendix 2**

Figure 2: *Incorporation of Quality of Life into the ICF framework*

### **Appendix 3**

Table 1: *Domains of Participation and Environment by Income and Gender*

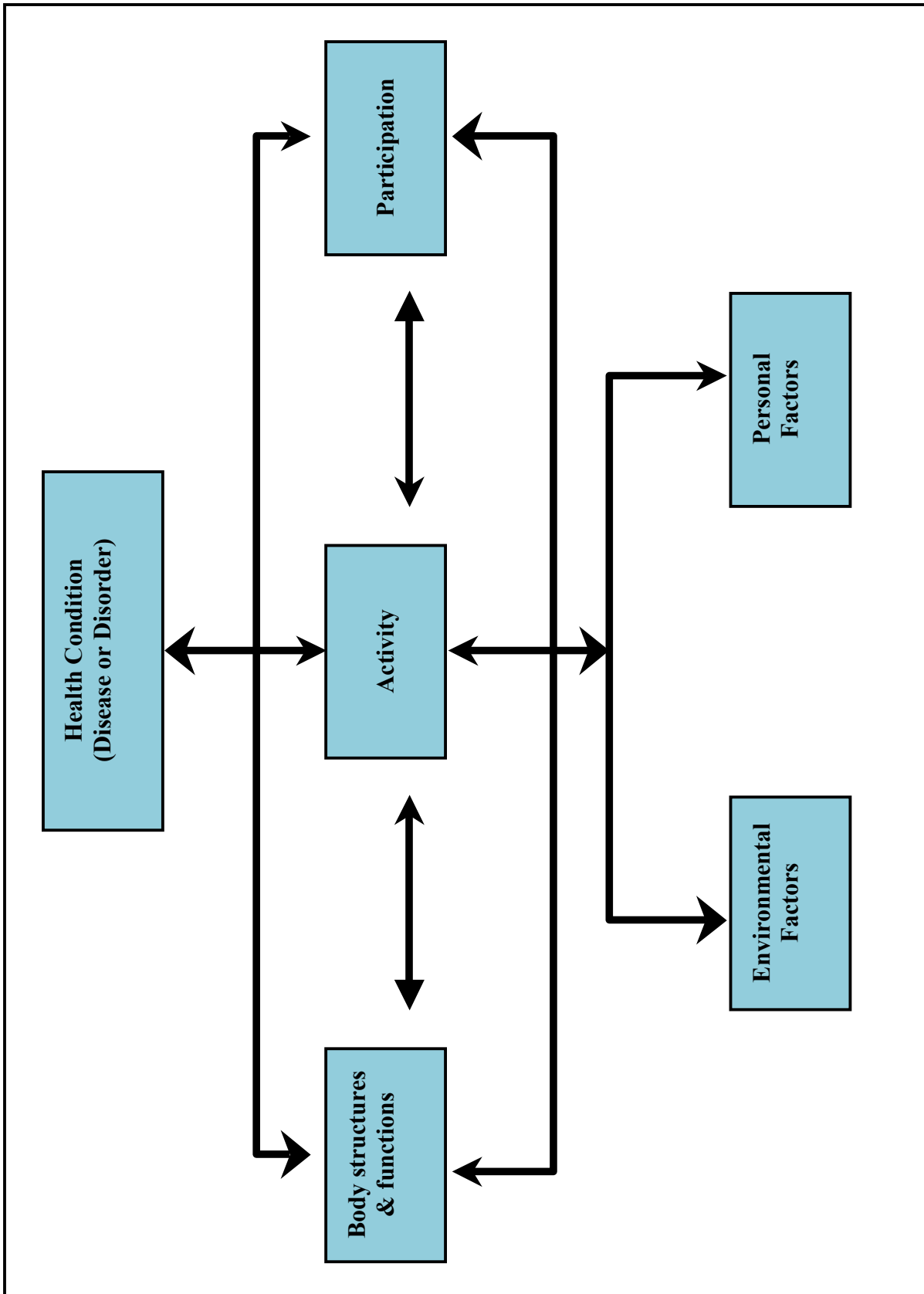
### **Appendix 4**

Table 2: *Young Adult Quality of Life and Satisfaction by Income and Accommodation Type*



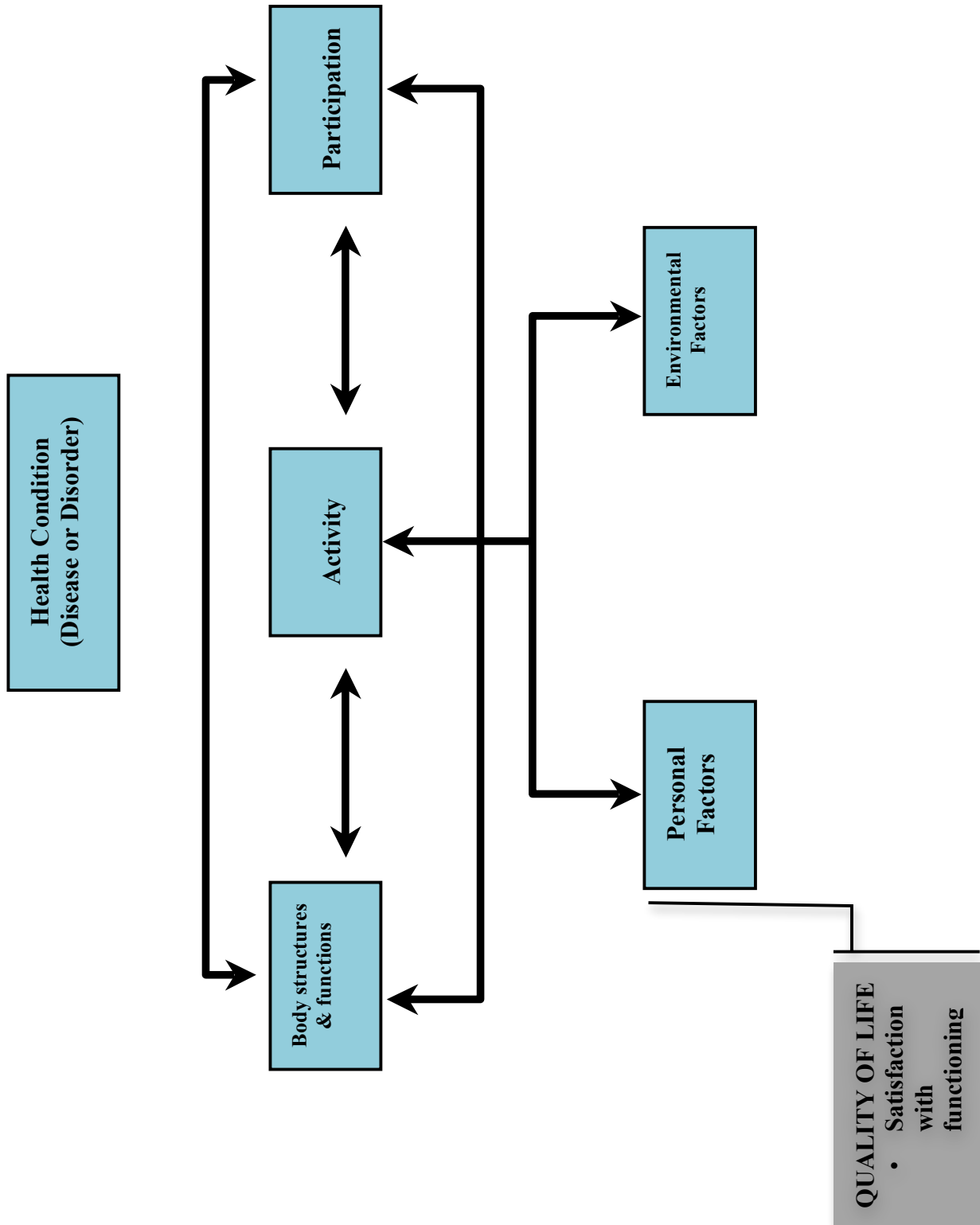
**Appendix 1**

Figure 1: *The interaction between components of the ICF. (World Health Organization., 2001, p. 26)*



Appendix 2

Figure 2: *Incorporation of Quality of Life into the ICF framework*



**Appendix 3**

Table 1: *Domains of Participation and Environment by Income and Gender*

	Income					Gender				
	<\$18,199		>\$18,199		<i>p value</i>	Female		Male		<i>p value</i>
	Mean	Std Dev	Mean	Std Dev		Mean	Std Dev	Mean	Std Dev	
<b>Domains of Participation</b>										
Nutrition	96.71	(17.11)	97.16	(6.99)	0.895	96.30	(15.09)	98.41	(5.31)	0.538
Fitness	93.55	(17.48)	97.50	(6.46)	0.254	94.83	(14.98)	96.96	(7.34)	0.545
Personal Care	95.47	(17.16)	98.33	(4.32)	0.380	96.45	(14.60)	98.21	(4.48)	0.593
Communication	99.36	(1.58)	98.47	(3.23)	0.208	99.14	(2.23)	98.54	(3.12)	0.405
Housing	97.81	(5.95)	96.75	(7.08)	0.548	96.80	(6.12)	97.62	(6.76)	0.654
Mobility	97.38	(8.00)	100.00	(0.00)	0.078*	98.56	(6.33)	99.15	(3.88)	0.705
Responsibilities	96.03	(16.80)	99.38	(2.19)	0.283	97.15	(14.28)	98.94	(2.66)	0.573
Interpersonal	91.57	(19.15)	96.54	(8.36)	0.200	92.73	(17.39)	97.34	(5.30)	0.242
Community Life	95.04	(17.37)	96.53	(9.47)	0.683	94.82	(16.19)	98.06	(5.97)	0.380
Education	96.58	(17.43)	96.44	(21.62)	0.706	97.13	(15.96)	93.57	(23.22)	0.523
Employment	86.98	(24.91)	98.47	(6.43)	0.018**	91.68	(21.00)	97.92	(8.86)	0.171
Recreation	93.59	(18.59)	96.10	(12.65)	0.551	94.54	(16.50)	95.24	(13.80)	0.870
<b>Domains of Environment</b>										
Social Networks	72.65	(67.58)	67.58	(12.88)	0.200	72.47	(15.08)	65.14	(12.85)	0.074*
Attitudes of Others	70.19	(12.68)	64.23	(12.31)	0.078*	68.76	(13.23)	64.64	(11.80)	0.226
Employment Services	66.31	(12.74)	61.98	(9.13)	0.155	64.28	(12.71)	64.42	(8.36)	0.964
Financial Resources	68.45	(20.53)	64.69	(13.68)	0.418	68.56	(18.41)	63.10	(14.50)	0.253
Commercial Services	76.62	(12.48)	67.00	(15.67)	0.02**	73.99	(15.76)	66.43	(11.38)	0.062*
Support Services	67.76	(12.93)	62.18	(12.41)	0.113	67.72	(14.18)	60.19	(8.16)	0.041**
Educational Services	77.08	(16.96)	73.47	(13.14)	0.609	77.01	(16.44)	72.11	(14.66)	0.480
Infrastructure	74.12	(12.27)	67.59	(11.29)	0.043**	72.53	(13.13)	67.49	(9.53)	0.142
Community Organisations	70.06	(11.48)	64.16	(11.86)	0.064*	68.80	(13.32)	64.05	(8.68)	0.156

Note: \* *P value* <0.08 \*\**P value* <0.05

**Appendix 4**

Table 2: *Young Adult Quality of Life and Satisfaction by Income and Accommodation Type*

	Income					Accommodation Type						
	<\$18,199		>\$18,199		<i>p value</i>	Own Home		Parental Home		Rental		<i>p value</i>
	Mean	Std. Dev.	Mean	Std. Dev.		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
<b>Quality of Life</b>												
Kidscreen-27	93.46	(16.94)	97.23	(12.28)	0.334	95.17	(8.52)	98.87	(13.75)	87.53	(15.83)	0.034**
<b>Satisfaction with Domains of Participation</b>												
Nutrition	90.63	(14.60)	94.61	(11.17)	0.258	98.96	(2.55)	94.10	(11.57)	86.25	(16.40)	0.061*
Fitness	84.86	(17.06)	93.75	(12.61)	0.031**	100.00	(0.00)	91.49	(12.33)	80.42	(20.30)	0.010**
Personal Care	93.15	(13.20)	97.84	(6.26)	0.092	100.00	(0.00)	97.66	(5.99)	89.58	(16.31)	0.017**
Communication	91.00	(13.84)	96.88	(8.31)	0.060*	100.00	(0.00)	95.00	(9.53)	90.63	(15.93)	0.201
Housing	90.54	(16.10)	96.70	(7.25)	0.069*	100.00	(0.00)	95.60	(10.49)	87.78	(16.47)	0.051*
Mobility	92.69	(13.87)	97.07	(7.62)	0.147	100.00	(0.00)	96.67	(7.75)	89.67	(16.85)	0.058*
Responsibilities	89.74	(13.81)	96.39	(10.29)	0.093	100.00	(0.00)	94.04	(10.99)	87.22	(15.06)	0.057*
Interpersonal Life	89.90	(11.74)	94.25	(11.65)	0.174	100.00	(0.00)	94.10	(9.88)	85.56	(14.76)	0.012**
Community	93.51	(11.95)	93.86	(15.69)	0.923	100.00	(0.00)	95.09	(12.39)	88.75	(17.75)	0.168
Education	96.00	(9.35)	89.00	(24.02)	0.181	100.00	(0.00)	97.06	(8.18)	78.85	(30.36)	0.004**
Employment	88.07	(17.30)	95.43	(10.26)	0.071*	98.44	(3.13)	94.27	(12.27)	85.43	(18.35)	0.096
Recreation	91.00	(15.12)	91.26	(13.42)	0.948	100.00	(0.00)	92.55	(13.97)	85.48	(14.69)	0.071*

Note: \* *p value* <0.08 \*\**p value* <0.05

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