CHILDHOOD OBESITY: CONTRIBUTIONS OF DEVELOPMENTAL RESEARCH TO INTERVENTIONS

Bridget Finnegan
Graduate 2010, Psychology
finnega@tcd.ie

ABSTRACT
Childhood obesity is a rising issue entailing both health and economic consequences. This paper looks to explore developmental research into childhood obesity with reference to risk factors, protective factors, and the social implications of overweight. Interventions that draw upon these factors are discussed. Limitations in the research are explored. Interventions that draw upon these factors are critically evaluated.

INTRODUCTION
The prevalence of childhood obesity has doubled over the past few decades (Davison & Birch, 2001), with 15% of children overweight and 25% at risk of overweight (Patrick & Nicklas, 2005). Consequences of obesity include heart disease, sleep apnoea, hypertension, type 2 diabetes, cancer, and endocrine disorders, the treatment for which could be lifelong and costly (Lobstein, Baur, & Uauy, 2004). As estimated by the National Taskforce on Obesity (2005) the subsequent health expenses are €30million annually. Developmental research can inform policy and practice around obesity. Factors influencing childhood obesity and suggested interventions targeting these factors are discussed.

RISK FACTORS AND PROTECTIVE FACTORS
Research has made important contributions to our understanding of the factors associated with obesity. The ecological model, as described by Davison & Birch (2001), suggests that child risk factors for obesity include dietary intake, physical activity and sedentary behaviour. The impact of such risk factors is moderated by factors such as age, gender. Family characteristics - parenting style, parents’ lifestyles - also play a role.
Environmental factors such as school policies, demographics, and parents’ work-related demands further influence eating and activity behaviours.

Patrick and Nicklas’ (2005) review of the literature investigates factors behind poor diet and offers numerous insights into how parental factors may impact on obesity in children. They note that children learn by modelling parents’ and peers’ preferences, intake and willingness to try new foods. Availability of, and repeated exposure to, healthy foods is key to developing preferences and can overcome dislike of foods. Mealtime structure is important with evidence suggesting that families who eat together consume more healthy foods. Furthermore, eating out or watching TV while eating is associated with a higher intake of fat. Parental feeding style is also significant (Birch & Fisher, 1998). The author’s found that that authoritative feeding (determining which foods are offered, allowing the child to choose, and providing rationale for healthy options) is associated with positive cognitions about healthy foods and healthier intake. Interestingly authoritarian restriction of “junk-food” is associated with increased desire for unhealthy food and higher weight.

Government and social policies could also potentially promote healthy behaviour. Research indicates taste, followed by hunger and price, is the most important factor in adolescents snack choices (Story et al., 2002). Other studies demonstrate that adolescents associate junk food with pleasure, independence, and convenience whereas liking healthy food is considered odd (Chapman & Maclean, 1993). This suggests investment is required in changing meanings of food, and social perceptions of eating behaviour. As proposed by the National Taskforce on Obesity (2005), fiscal policies such as taxing unhealthy options, providing incentives for the distribution of inexpensive healthy food and investing in convenient recreational facilities or the aesthetic quality of neighbourhoods can enhance healthy eating and physical activity.

Another factor which contributes to obesity levels is sedentary behaviour, such as TV viewing. TV viewing can also impact children in terms of media effects. Story et al. (2002) discuss research which indicates the number of hours children spend watching TV correlates with their consumption of the most advertised goods, including sweetened cereals, sweets, sweetened beverages, and salty snacks. Despite difficulties in empirically assessing the media impact, other research discussed
emphasises that advertising effects should not be underestimated. Media effects have been found for adolescent aggression and smoking and formation of unrealistic body ideals. Regulation of marketing for unhealthy foods is recommended, as is media advocacy to promote healthy eating.

SOCIAL IMPLICATIONS OF OVERWEIGHT
Overweight may carry negative social implications which interventions could target in order to improve the lives of those with obesity. In one study, overweight adolescents received significantly fewer friendship nominations from peers, and sometimes even received no friendship nominations (Strauss, Harold, & Pollack, 2009). This is worrying as the importance of friendship for the promotion of mental health is well documented (Strauss et al. 2009). Another study (Janssen et al., 2004) found overweight youths were more likely to be bullied. Additionally, overweight boys and girls aged 15-16 years were more likely to bully others. The authors suggest that one reason for these findings may be that children are heavily influenced by stereotypes associated with physical cues. “Anti-fat” stereotypes were particularly evident in a study by Musher-Eizenman et al. (2004) which found even very young children hold negative attitudes towards overweight peers, particularly when they consider weight to be within one’s control.

The experiences resulting from the social implications of obesity have serious consequences. Eisenberg, Newmark-Stainer and Story (2003) revealed that teasing about weight is associated with low body-satisfaction, low self-esteem, and suicidal tendencies. It is consequently vital that research contributes to practical and effective interventions to target the negative social implications of obesity.

INTERVENTIONS
Taking aforementioned research into account, several interventions have been developed to prevent and deal with issues arising from childhood obesity. Successful interventions generally highlight the importance of a multi-disciplinary approach. For example, Nemet et al.’s (2005) intervention suggested dietary changes, nutritional education, physical activity, behavioural modifications and parental involvement produced significant changes in weight, cholesterol levels and fitness after 3 months.
Impressively, these changes persisted at the 1-year follow up. More recently, Gentile et al. (2009) evaluated the Switch program, targeting reduced TV viewing, increased fruit and vegetable consumption and increased physical activity at home, school and community levels. Again the importance of targeting multiple levels of influence was evident. At the 6-month follow up, there were significant changes in TV viewing and consumption of fruit and vegetables, although no effect on physical activity or BMI. The authors emphasise that these results are not trivial; obesity is a multifactorial condition, and small changes can have large long-term benefits. Results also underline the importance of family involvement in interventions.

Social consequences for overweight individuals may be improved through participation in sports or extracurricular activities (Strauss, et al., 2009). Since sports activities may appear intimidating to overweight youths, provision of alternative activities could be advisable. Eisenberg et al. (2003) suggest investment in support and skills training for overweight children who experience teasing. According to Janssen et al. (2004), school interventions involving awareness of bullying, increased supervision, and victim support can reduce bullying by 30–50%. Musher-Eizenman et al. (2004) advise educating children about diversity of body-size. Similarly, research should investigate ways to influence internal attributions for weight by discussing low-responsibility conditions, e.g. genetic disorders (Musher-Eizenman, et al., 2004). While this research offers valuable insight, several limitations are apparent. Salient sources of teasing have yet to be identified (Eisenberg et al., 2003). Future research must assess the reliability and validity of friendship selection measures as well as compare children’s attitudes with actual friendship behaviour (Musher-Eizenman et al., 2004). Qualitative research may be useful in clarifying why negative stereotypes are associated with overweight individuals.

LIMITATIONS OF RESEARCH
While research indicates numerous methods for preventing obesity, critical evaluation has drawn attention to the lack of investigation of predictive factors across multiple levels of influence- home, school, etc. (Story, Neumark-Stainzer & French, 2002). Further research is required to identify factors which are most influential and amenable to change. Longitudinal studies, improved psychometric properties in measurements,
and more direct observation of dietary behaviour are recommended to enhance the contribution of research to interventions (Story et al. 2002).

Although informative, much of the research on intervention strategies is flawed. The distinction between statistical and clinical significance constitutes one issue requiring examination. Many studies fail to track the extent to which children, parents and teachers utilise advised strategies (Nemet et al., 2009). A review by Flodmark, Marcus & Britton (2006) revealed 41% of prevention interventions investigated produced positive effect indicating prevention of childhood obesity is possible. However this finding is of little practical benefit since characteristics of effective studies were not identified. Some frequent methodological limitations of unsuccessful studies include inadequate sampling, inappropriate analysis, poor monitoring of “dose” received by participants, and an acute lack of theoretical basis for intervention (Thomas, 2006). The question of statistical versus clinical significance is also raised.

**CONCLUSION**

In conclusion, the research in this area is relatively beneficial in guiding practice. Based on the research discussed, key challenges facing clinicians include improving criteria for measuring overweight, development of interventions which alleviate negative social consequences of obesity, educating children, parents and teachers about consequences of unhealthy lifestyles, and how overweight can be avoided, revision of advertising standards, and further investigation of characteristics associated with successful interventions. An exploration of individual differences might also illuminate our understanding of childhood obesity. It is probable that interventions could benefit from research involving individual, emotional, and personality factors which may predispose young people toward overweight and obesity.
REFERENCES


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