

SCIENTIFIC
SECTION

Smile aesthetics and malocclusion in UK teenage magazines assessed using the Index of Orthodontic Treatment Need (IOTN)

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Objective: *There is a significant demand for orthodontic treatment within the UK from adolescent girls, a group known to be influenced by the media portrayal of body form and body image, which may extend to the presentation of malocclusions. This study examined the portrayal of malocclusion in a media type that targets teenage girls under 16 years of age.*

Materials and methods: *A representative selection of 1 month's magazines targeting this group were investigated, and the frequency and severity of malocclusions displayed were assessed. Two calibrated examiners viewed all the smiles (on two occasions) using a modification of Index of Orthodontic Treatment Need (IOTN) and assigned an Aesthetic Component Score to each smile.*

Results: *It was found that the aesthetic score is low (less than 7) for the majority of models (92.8%) indicating no need or a borderline need for treatment. Only 7.2% of models exhibited a definite need for treatment.*

Conclusion: *It appears that the portrayal of malocclusion in teenage magazines does not reflect the general treatment need of the adolescent population.*

Key words: *Adolescent, aesthetics, media, IOTN*

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Introduction

It has been well documented that considerable importance is placed on dental aesthetics, and both parents and their children feel that pleasant dental aesthetics are an important factor for physical well being.¹ Children with crowded dentitions are not only considered less attractive by lay people, but also are perceived to be less intelligent, whereas children with well aligned teeth are thought to be friendlier, of a higher social class, more popular and more intelligent.^{2–5} Young adults are aware, to varying extents, of anterior occlusal traits and this is particularly so in those who seek orthodontic treatment.^{6,7} Furthermore, adolescent children are likely to be critical of their own dental appearance as there is a meaningful association between treatment need [by the Index of Orthodontic Treatment Need (IOTN)] and concern expressed by 11-year-olds.⁸ Seventy-five per cent of patients who seek orthodontic treatment do so for aesthetic reasons, and

girls are more likely to recognize dental irregularities and place more importance on this than boys.⁹ They are consequently more likely to seek orthodontic treatment.¹⁰

Facial attractiveness has been studied widely and girls as young as 9 years of age discern facial attractiveness in the same way as their mothers, although not necessarily to such a 'sophisticated' level.¹¹ It is therefore not surprising that adolescent girls are concerned with their facial attractiveness. As well as facial attractiveness, teenagers are concerned with their body image and, indeed, those with good body satisfaction are thought to be more popular.¹² Importantly, children are increasingly affected by the media and exposure to certain types of media (e.g. music videos) cause some teenage girls to place an even greater importance on appearance.^{13,14} In addition, portrayal of 'ideal' bodies in female magazines can lead to feelings of inadequacy in some female readers causing them to be excessively critical of their own body and to idolize the 'ideal'.^{15,16}

Aim

The aim of this paper was to find out what level of dental attractiveness was presented within girls' teenage magazines as 'desirable'.

Method

A city center high street retailer was asked to supply a copy of all the UK teenage girls' magazines sold in 1 month for use in this study. This was taken as a 'representative' sample of the magazines on the general market available to under 16-year-old girls. The smile was assessed using a modification of the aesthetic component of IOTN. We felt that it would be reasonable to assess the Aesthetic Component (AC) of the smiles portrayed in the magazines as long as both first premolars of the upper arch and some of the lower labial segment were visible in the smile. A series of 4 clear acetate templates of varying sizes were then constructed, but with the same height to width ratio as those photographs used in the AC scale. The surrounding region was blacked out (to obscure the model's face and surrounding magazine articles), and two vertical lines were drawn on each template to indicate the inter-premolar width.

Two examiners, previously calibrated for IOTN, analyzed consecutive pages of each magazine. The template of best fit was placed over every smile that fulfilled the above criteria. The Aesthetic Score was recorded. If there was any disagreement between the examiners a consensus was reached.

Statistics

Repeat observations were analyzed by kappa statistics and were found to show adequate agreement.

Results

Table 1 includes the distribution of orthodontic treatment need according to the IOTN AC scale for the analyzed smiles. Eighty-four smiles showed both upper premolars and some of the lower dentition, and were of sufficient size for the investigators to assign an AC score. Sixty-six were female, and one was noted to be wearing

a fixed orthodontic appliance. Most of the smiles (84.3%) had a low aesthetic score, and therefore had no or only a slight need for orthodontic treatment. 8.4% of the smiles had a borderline or moderate need for treatment, as assessed using the AC, and 7% of the smiles had a definite need for orthodontic treatment.

Statistics

Repeat observations revealed were analysed by kappa statistics and were found show adequate agreement.

Discussion

Inevitably, the majority of the smiles within the magazines were too small to be considered suitable for analysis and most of those analyzed were small. The aesthetic score tends to be very good and minor irregularities are masked to some extent by the diminutive photographs, which may bias the AC in a favorable (lower) direction. Subjectively, the authors felt that the majority of models in the magazines were in their mid to late teens. These magazines are aimed at 11–14-year-olds, for which age group the need for orthodontic treatment in the UK is about approximately one-third.¹⁷ However, only 7% of the smiles assessed were considered to be in need of orthodontic treatment. It was, of course, not possible to assess the entire dentition, and one could argue that, if the whole dentition could be seen, then more malocclusions would have been detected. During publishing there may also have been airbrushing of obvious aesthetic faults and manipulation of the smiles, again distorting the AC.

Only one model (approximately 1% of the sample) was wearing a fixed orthodontic appliance and this is not representative of the teenage population in general.

It would appear that teenage girls can be adversely affected in terms of health by persistent media portrayal of unattainable 'ideal' body shape. Perhaps the over representation of 'ideal' malocclusions as 'the norm' in teenage girls' magazines may stimulate or drive dissatisfaction with their occlusion. The presence of models wearing fixed appliances would, perhaps, not reduce the desire to have an ideal smile, but emphasize that such a

Table 1 The number of smiles exhibiting each Aesthetic Component score

AC	1–4 (No/slight need for treatment)	5–7 (Moderate/borderline need for treatment)	8–10 (Definite need for treatment)
No. of smiles (<i>n</i> = 83)	70	7	6
% Of total smiles	84.4	8.4	7.2

smile is achievable through orthodontic treatment and is not necessarily a 'birth rite'!

Conclusion

Adolescents are known to be adversely affected by body image in the media, it is of no surprise that the dentition of the 'cool' and 'desirable' models portrayed in UK teenage girls magazines appear to have little need for orthodontic treatment, which is not comparable with their readers. The low aesthetic score for the majority of models probably does not reflect the true levels of malocclusion in the remaining dentition. The portrayal of such images may further compound adolescent girls' anxieties regarding body image.

Contributors

CRM was responsible for study design, obtaining literature from which data was obtained, gathering data and drafting the paper. PHG was responsible for the statistical analysis and revision of the paper. TG assessed and interpreted the data and revised the paper. CRM, TG and PHG gave final approval. CRM is the guarantor.

References

1. Birkeland K, Boe OE, Wisth P J. Relationship between occlusion and satisfaction with dental appearance in orthodontically treated and untreated groups. A longitudinal study. *Eur J Orthod* 2000; **22**: 509–18.
2. Kerousuo H, Hausen H, Laine T, Shaw WC. The influence of incisal malocclusion on the social attractiveness of young adults in Sweden. *Eur J Orthod* 1995; **17**: 505–12.
3. Shaw WC, Rees G, Daw M, Charles CR. The influence of dentofacial appearance on the social attractiveness of young adults. *Am J Orthod Dentofac Orthop* 1987; **87**: 21–6.
4. Shaw WC. The influence of children's dentofacial appearance on their social attractiveness as judged by peers and lay adults. *Am J Orthod Dentofac Orthop* 1981; **79**: 399–415.
5. Mandall NA, McCord JF, Blinkhorn AS, Worthington HV, O'Brien KD. Perceived aesthetic impact of malocclusion and oral self-perception in 14–15 year old Asian and Caucasian children in Greater Manchester. *Eur J Orthod* 2000; **22**: 175–83.
6. Espeland L, Stenvik A. Perception of personal dental appearance in young adults: relationship between occlusion, awareness and satisfaction. *Am J Orthod Dentofac Orthop* 1991; **100**: 234–41.
7. Fox D, Kay EJ, O'Brien KD. A new method of measuring how much anterior alignment means to adolescents. *Eur J Orthod* 2000; **22**: 299–305.
8. Reidmann T, Georg T, Berg R. Adult patients' view of orthodontic treatment outcome compared with professional assessments. *J Orofac Orthop* 1999; **60**: 308–20.
9. Birkeland K, Boe OE, Wisth PJ. Orthodontic concern among 11-year old children and their parents compared with orthodontic treatment need assessed by index of orthodontic treatment need. *Am J Orthod Dentofac Orthop* 1996; **110**: 197–205.
10. Gray M, Anderson R. A study of young people's perceptions of their orthodontic need and their experience of orthodontic services. *Prim Dent Care* 1998; **5**: 87–93.
11. Kissler J, Bauml KH. Effects of the beholder's age on the perception of facial attractiveness. *Acta Psychol (Amst)* 2000; **104**: 145–66.
12. Graham MA, Eich C, Kephart B, Peterson D. Relationship among body image, sex, and popularity of high school students. *Percept Mot Skills* 2000; **90**: 1187–1193.
13. McLeod JM. Media and civic socialisation of youth. *J Adolesc Health* 2000; **27**: 45–51.
14. Borzekowski DL, Robinson TH, Killen TD. Does the camera add 10 pounds? Media use, perceived importance of appearance and weight concerns among teenage girls. *J Adolesc Health* 2000; **26**: 36–41.
15. Hamilton K, Waller G. Media influences on body size estimation in anorexia and bulimia. An experimental study. *Br J Psychiatry* 1993; **162**: 837–40.
16. King N, Touyz S, Charles M. The effect of body dissatisfaction on women's perception of female celebrities. *Int J Eat Disord* 2000; **27**: 341–7.
17. Burden DJ, Holmes A. The need for orthodontic treatment in the child population of the United Kingdom. *Eur J Orthod* 1994; **16**: 395–9.