Recognition Accuracy, Stereotypic Preference, Aversion, and Subjective Judgment of Body Appearance in Adolescents and Young Adults

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Accuracy of body image, stereotypic preference, and aversion to body types were investigated in two studies. Using line drawings of 19 somatotypes in three orientations, 160 subjects in four age groups selected preferred, least preferred, and self-estimates of their own body types. Five independent ratings were made by judges of the subjects' body type. Females underestimated and males tended to overestimate their body dimensions. Both sexes overwhelmingly chose the endomorph as the least preferred somatotype. The consensus among females was to prefer slim figures and among males to prefer a medium muscular physique. In the second study three aspects of body image were studied by adjusting one's image on a television monitor that displayed a whole continuum of self-images from ectomorphy to endomorphy. Subjective body images were found to lie between the objective somatotype and the ideal.

INTRODUCTION

Body image, the way individuals conceive their bodies, has been the subject of many studies. Schilder (1935) emphasized that body image was
a concept that changed across time and situations, and was influenced by various sensory experiences. He also recognized the important relationships among social, psychological, and physiological factors in body image formation.

During adolescence, rapid physical development and the emergence of the secondary sexual characteristics result in a need for a restructuring of the body image. To maintain an accurate body image constant adjustment to the reality of the body's rate of change is necessary. Schilder (1935) noted that if the rate of change was rapid, as happened during adolescence, a heightened interest occurred in the changed body parts. It also appears that a certain preoccupation with the body self is necessary for the development of an undistorted body image.

Schonfeld (1966), investigating the importance of the body to the adolescent, noted that any deviation from the perceived ideal may result in feelings of difference and inferiority. Having the right physical appearance and being attractive are to some degree synonymous, and thus physical appearance takes on social as well as sexual importance (Fisher and Cleveland, 1968).

Due to the lack of a precise operational definition, the concept of body image has been referred to as the body schemata, the postural model of the body, perceived body, body ego, and body boundaries (Kolb, 1969). The different concepts are reflected in the various methods employed to assess body image. Bennett (1960), in attempting to define body image, operationally referred to it as the set of phenomena named by individuals when asked to describe their own bodies, to reply to a questionnaire about their bodies, or to draw their bodies. Among the many methods that have been used to study body image have been projective techniques (Fisher and Cleveland, 1968), drawing the inside of the body (Tait and Ascher, 1955), schematically representing body parts (Katcher and Levin, 1955), using aniseikonic lenses (Wittreich, 1953), questionnaires (Secord, 1953), life-size markings of body dimensions (Askevold, 1975), estimations using calipers (Reitman and Cleveland, 1964), and the distorting photograph technique (Glucksman and Hirsch, 1969).

The selection of an individual's appropriate body shape from a series of somatotype figures has also been used to investigate the accuracy of body image (Adams and Caldwell, 1963; Brenner and Hinsdale, 1978; Rowe and Caldwell, 1963; Schonbruch and Schell, 1967).

It has been suggested that self-identification studies, using photographs of subjects, reveal that part of the body image that is accessible to consciousness (Arnhoff and Damianopoulos, 1962). Although Gertsmann (1958) and Smythies (1953) emphasized the unconscious component of body image, Schilder (1935) regarded the concept as the postural scheme we have of our bodies containing both conscious and unconscious components. Self-
Identification studies thus examine the former aspect of body image (Arnhoff and Damianopoulos, 1962; Collins, 1981; Collins et al., 1976; Garner et al., 1976; Schonbruch and Schell, 1967).

**STUDY 1**

The aim of the first study was to examine the accuracy of body recognition during adolescence. Arnhoff and Damianopoulos (1962), in a study of 20-year-old male college students, found 100% accuracy when they were asked to identify their own body shapes from a series of six photographs in which clothing and facial and situational cues had been removed. Collins et al. (1976), using a sample of 17-20-year-olds, replicated and extended this study by including both sexes and investigating three body orientations. Although the findings revealed no sex differences in accuracy scores, females were found to take longer in identifying themselves than males. For both sexes accuracy of front identifications was higher and made faster than rear identifications, which in turn were made faster and more accurately than side identifications.

A subsidiary aim of this first study was to investigate body preferences. Attitudes toward certain body builds are influenced by social stereotypes associated with physical characteristics. The endomorphic body build has the least favorable stereotype for both males and females (Caskey and Felker, 1971; Clausen, 1975; Dwyer and Mayer, 1968; Gascaly and Borges, 1979; Grinder, 1973; Lerner, 1969; Lerner and Gellert, 1969; McCandless, 1960; Staffieri, 1967; Yates and Taylor, 1978). For males the mesomorphic body build is regarded as the most favored and associated with socially desirable personality traits (Cavoir and Lombardi, 1973; Dwyer and Mayer, 1968; Gascaly and Borges, 1979; Lerner, 1969; Staffieri, 1967; Strongman and Hart, 1968). For females the ectomorphic body shape is the most preferred somatotype (Caskey and Felker, 1971; Dwyer and Mayer, 1968).

A third aim of the first study was to investigate subjective body image. The biological changes and the adaptation of cultural and social ideals of appropriate and attractive appearance necessitate a psychological adjustment to the limitations and realities of the adolescent's own body build and appearance.

Burton and Whiting (1961) suggested that during the maturational process adolescents have to come to terms with three identities: the attributed, the subjective, and the optative identity. Attributed identity referred to the status attributed to the individual by other members of society, the subjective identity referred to the status the individual sees himself or herself as occupying, and the optative identity referred to the status the adolescents
would like to have. It was considered that maturity was achieved when the adolescent felt "I am what I would like to be and what I appear to other people."

This model for congruent identity formation can also be applied to describe body image formation. Just as an individual has to incorporate three different identities, the recognition of three different body images may result in an accurate body concept. The subjective body image is how the adolescent perceives his or her body, the objective body image is the way others see the individual's body, and the optative or ideal body image is the way the adolescent would like to appear. Evidence suggests that the subjective body image can be influenced by the ideal body image. For example, Singer and Lamb (1966) found that the majority of female adolescents distorted their self-estimates toward the estimates of their ideal figures. Zion (1965) observed a significant relationship between the amount of discrepancy between the ideal body concept and one's own body concept and the amount of discrepancy between the ideal self-concept and one's own self-concept. The more positive the self-concept, the smaller the discrepancy.

Similarly, Jourard and Secord (1953) confirmed the hypothesis that body cathexis or the feeling of satisfaction or dissatisfaction with the various parts or processes of the body were integrally related to the individual's self-concept. Females have been found to cathect their bodies more than males, that is, to experience both more positive and negative feelings about their bodies (Lerner et al., 1973, 1976). A study involving both male and female adolescents by Musa and Roach (1973) found considerable evidence that the girls' physical ideal was further from what they perceived to be correct about themselves than it was for boys. It was further revealed that boys more often than girls rated their personal appearance as more desirable than that of their peers. Similar findings were reported by Bohan (1973).

Method

Subjects

One hundred and sixty student volunteers from introductory psychology courses at Macquarie University and from schools within the vicinity of the university acted as subjects. Four groups with equal numbers of males and females in the age categories 13–14, 15–16, 17–19, and 20–25 years, representing early, middle, and late adolescence, and young adulthood, were studied.
**Procedure**

One hundred and fourteen cards with black line drawings of male and female somatotypes in three body orientations (front, side, and rear) were prepared. These were drawn to scale on white cards 75 x 130 mm in size (19 Somatotypes x 2 Sexes x 3 Orientations). Figure 1 illustrates six of these cards for the female subjects. The examples should be considered in conjunction with the categories shown in Table I as they illustrate the front, side, and rear cards for the balanced mesomorph and the strong endomorph female figures.

The male somatotypes were taken from those used by Sheldon (1954). The female drawings were based partly on Sheldon et al. (1963). Eight of

![Fig. 1. Front, side, and rear outline drawings for the female balanced mesomorphic figure above and strong endomorphic figure below.](image)
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Sheldon's (1963, pp. 290-299) line drawings were used as anchor points at the beginning and at the end of the series, and at various points between. A further 11 line drawings were interpolated between these anchor points to make up the series of 19 line drawings for each orientation. Thus a graded series similar to that for males was devised. The interpolated shapes were derived from comparisons with the full set of male drawings taken from Sheldon's (1954) study together with photographs of female shapes from Collins (1981) and Collins and Propert (1983). To achieve a scale along the endomorph-ectomorph continuum, seven independent raters ordered the 19 male and 19 female somatotypes from the most endomorphic through to the most ectomorphic body shape. Kendall's coefficient of concordance for the male series was 0.81 and for the female series was 0.77. The continuum is shown in Table I.

On entering the laboratory the subjects were seated, and they were shown the six sets of cards depicting front, back, and side line drawings of the body shapes of their own sex. They were requested to select the body shape that they thought corresponded closest to their own shapes. This selection was termed the subjective somatotype. Next they were asked to select from the cards the body shape they would like to have. This selection was termed the ideal somatotype. Finally, a least preferred body shape, the aversive somatotype, was selected. Prior to testing a new subject, the card order within sets and the examination order of different sets were randomized.

A photograph was then taken of each subject using an EE100 Polaroid camera and 667 Polaroid film that produced an instant 8.3 \times 10.8 \text{ cm} black and white coatless print. While being photographed the subjects stood on a strong metal-based rotating platform, 10 cm high and 45 cm in diameter. An outline of two feet placed 95 cm apart at the heels and pointing outwards at an angle of 25° had been painted on the platform. They stood in a standard position for photographs in three orientations. For the front view they stood full height with eyes slightly raised to look at a fixation point approximately one meter above the camera. Feet were placed on the imprints on the platform, and the arms were held by the sides and slightly away from

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<tr>
<th>Table I. Nineteen-Point Somatotype Scale Based on Sheldon's Categories</th>
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<tr>
<td><strong>Endomorphs</strong></td>
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<td>7. Ectomorphic</td>
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the body at an angle of approximately 25°. For the side and rear views the platform was rotated to photograph the left side and rear orientations with the subject standing in the position described above.

During this procedure the subjects were clothed in black leotards or swimming costumes that, when photographed against a light background, produced distinct contours.

Five independent judges later viewed the photographs with the heads occluded and compared them with the appropriate sets of somatotype cards to determine the objective somatotype for each subject. The objective somatotype was based on the mean of the five raters' judgments. Pearson product moment correlations of the five judgments ranged from 0.54 to 0.79 for the front view ($\bar{X} = 0.69$), 0.52 to 0.72 for the side view ($\bar{X} = 0.63$), and 0.61 to 0.75 for the rear view ($\bar{X} = 0.68$).

Results

The results are presented in three sections: Accuracy of judgments of body type, selection of the most preferred and least preferred somatotypes, and analysis of subjective body types.

Accuracy of Judgments

Multivariate analysis of the cards selected by subjects revealed that age was not significant ($F[27,138] = 1.43, p = 0.15$); however, sex was significant ($F[9,144] = 4.00, p < 0.01$). Univariate $F$ tests for sex indicated significant differences for the front ($F[1,152] = 5.91, p < 0.02$) and rear orientations ($F[1,152] = 7.09, p < 0.01$), but not for side orientation ($F[1,152] = 0.30, p = 0.59$). Analysis of the means of the accuracy scores revealed that males were more accurate than females in somatotype card selection for the front and rear body orientations.

The accuracy score for this analysis was obtained by calculating the difference between the subjective and the objective somatotype on the 19-point continuum (see Table I) from endomorph to ectomorph. A score of zero represented 100% accuracy, a positive score meant that the subjects were underestimating their body shapes, and a negative score meant they were overestimating their body shapes. Females tended to underestimate their body shapes for front ($\bar{X} = 1.61$) and rear ($\bar{X} = 1.23$) orientations, while males were 100% accurate for front orientation and tended to overestimate slightly ($\bar{X} = -0.26$) their rear body shapes. The underestimates by the females were significant for both front orientation ($t[79] = 3.93, p < 0.001$) and rear orientation ($t[79] = 3.39, p < 0.001$); however, for males the slight
overestimation did not reach significance \( (t[79] = 0.49, p > 0.20) \). None of the variations from the objective somatotypes for the side orientation reached significance.

**Somatotype Preferences**

An examination of the selection of the most preferred body shapes in the three orientations revealed an overall consensus among females to choose the thin, ectomorphic, or balanced figure. The four most preferred somatotypes were for front orientation: moderate ectomorph (29%), extreme ectomorph (24%), strong ectomorph (13%), and balanced mesomorph (11%); for side orientation: strong ectomorph (42%), endomorphic ectomorph (17%), balanced mesomorph (11%), and moderate ectomorph (9%); and for rear orientation: balanced mesomorph (27%), extreme ectomorph (20%), strong ectomorph (15%), and endomorphic ectomorph (11%). The consensus among males was to select the medium muscular, mesomorphic, and balanced body builds as ideal shapes. The four most preferred somatotypes in the three orientations for males were for front orientation: ectomorphic mesomorph (23%), mesomorph-endomorph (16%), ectomorph-mesomorph (14%), and extreme mesomorph (13%); for side orientation: balanced mesomorph (34%), ectomorphic mesomorph (22%), extreme mesomorph (21%), and ectomorphic mesomorph (6%); and for the rear orientation: extreme mesomorph (32%), ectomorphic mesomorph (15%), ectomorph-mesomorph (13%), and balanced mesomorph (10%).

The selection of the least preferred body type was consistent for both sexes over the three orientations. The percentages of males and females respectively selecting either the extreme or strong endomorph as the least preferred somatotype were for the front orientation (91 and 98%), for the side orientation (91 and 93%), and for the rear orientation (94 and 97%).

**Analysis of Subjective Body Types**

The third analysis was carried out to test the hypothesis that the subjective body image would lie between the objective somatotype and the ideal. For paired comparisons, because of the number of \( t \) tests involved, the Bonferroni family error rate was set at 0.05 and the individual alpha level at 0.005. None of the comparisons for the male group reached significance, although as can be seen from Table II, there were a number of trends in the predicted direction. For females a different picture arose. Ignoring age groups, paired comparisons between all orientations and all somatotype ratings were significant at the 0.005 level. When differences for ages were analyzed (see
### Table II. Mean Ratings of Objective, Subjective, and Ideal Somatotypes for Males Over Age for Front, Rear, and Side Orientations

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Orientation</th>
<th>Objective</th>
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<th>Subjective</th>
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<th>Ideal</th>
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<tr>
<td>Front</td>
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<td>Rear</td>
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<td>Side</td>
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<td>*Trend toward subjective ratings lying between objective and ideal somatotypes.</td>
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Table III) nothing of significance was found for ages 13–14, although the trends were in the predicted direction. At 15–16, comparisons between objective and ideal somatotypes ($t_{19} = 4.39$, $p < 0.005$), and subjective and ideal somatotypes ($t_{19} = 3.20$, $p < 0.005$), for the front orientation, as well as objective and ideal somatotypes ($t_{19} = 4.87$, $p < 0.005$) for the rear orientation, were found to be significant. At 17–19, all comparisons with $t$ values at least greater than 3.00 were significant, with the exception of ob-

### Table III. Mean Ratings of Objective, Subjective, and Ideal Somatotypes for Females Over Age for Front, Rear, and Side Orientations

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<tr>
<th>Age (years)</th>
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jective and subjective somatotypes for front and side orientations, and the subjective and ideal comparison for rear orientation. At 20–25, the subjective and ideal for the rear \( t[19] = 3.64, p < 0.005 \), subjective, and ideal for the side \( t[19] = 3.85, p < 0.005 \), and the objective and ideal for the side orientation \( t[19] = 4.85, p < 0.005 \), were significantly different.

**STUDY 2**

Shulman (1970) has stressed the need to replicate studies, whatever their findings, before we generalize in the area of psychology. Lerner and Spanier (1980) support this claim by their assertion that we should replicate before placing too much confidence in our findings. Not only are replications necessary to determine the consistency and reliability of our findings, but replications using different methodology are an important element in determining the convergent validity of our findings (Anastasi, 1982). For these reasons further investigations of the findings reported above were carried out.

The least controversial of the results from the first study and the most widely accepted in the literature on aversive body types is that the least preferred somatotype is endomorphic. This finding was not reexamined. In the second study we sought to replicate three of the findings noted above: differential accuracy of recognition of body image between males and females, somatotypic preference, and the relationships among objective, subjective, and ideal body images. The proposal that adolescents and young adults tended to have subjective images of themselves, which were displaced from their objective shape in the direction of their ideal image, seemed particularly worthy of further research.

In body recognition studies it appears individuals compare external representations of their bodies with cognitive images that have evolved through experiencing their bodies in various situations and examining their reflections over time. After examining frontal reflections of their bodies, individuals then generalize these configurations to rear orientations. Further, when side orientations are examined, the number of available cues diminishes, leading to less accurate identifications (Collins and Propert, 1983). Therefore only the frontal orientation was examined in the second study.

Considering the innumerable range of human physiques, if subjects are asked to indicate which stimuli from arrays of line drawings represent their own somatotypes there is no guarantee that a perfect match will be available from the array of cards on display. If a different technique is used, such as arrays of photographic prints of subjects with their heads occluded and standing in a stereotyped position, there is no guarantee that the identification will be based on the gestalt. All manner of idiosyncratic blemishes, asymmetries, or aspects of unique morphology may be used (Collins *et al.*, 1976).
A more refined technique involves photographing a subject and using a lens to distort the impression so that a series of somatotypes of the one individual can be perused. A video camera is used to distort the photographs and to provide on the monitor screen an entire continuum of representations of the same figure ranging from extreme endomorphy through mesomorphy to ectomorphy.

**Method**

**Subjects**

One hundred and forty-nine students from an introductory psychology course at Macquarie University volunteered to act as subjects. There were 42 males aged between 17 and 25 years ($X = 18.93$, $SD = 1.35$) and 107 females also between 17 and 25 years ($X = 19.17$, $SD = 1.97$).

**Apparatus**

The procedure involved taking a photograph of the subjects using a Polaroid camera that produced an instant print. The subjects stood in the same stereotyped position described in Study 1 while being photographed.

The photographic print was scanned by an Ikegami 2.5 cm video camera, type CTC 5000B, using a Fujinon C5 × 20A zoom lens with a 3 diopter close-up attachment. The signal from the video camera was fed into two monitors arranged in tandem. The one viewed by the subjects was a 43 cm Electrohome EVM1719X monitor. The other, which had a camera attachment, was an Electrohome EVM1220 30 cm monitor. The camera that was attached to the latter monitor was a Polaroid CU5 with a 12 cm lens. A Polaroid CU5 88-49 oscilloscope hood (size 16 × 23.3 cm) ran between this camera and the video screen. The same Polaroid 667 film for instant development was used in this camera. This second print provided a permanent photographic record of the subject's subjective judgment.

An adjustable control dial with a two meter extension cord altered the gain or size of the field deflection of the vidicon in the Ikegami video camera. Images could be varied in the horizontal plane to give an "endomorphic," "mesomorphic," or "ectomorphic" figure without distorting height, while the 625 scan lines on the screen remained constant. The width of the picture on the screen was varied by altering the scanning current in the camera tubes' vertical scanning coils. This ensured that the line structure on the monitor did not change. Linearity of the vertical scanning current was maintained by using a current feedback circuit. The amplitude of this current was altered by varying the feedback ratio. The control was graduated on a linear
scale that had been derived in relation to the original frame size using one
centimeter square graph paper as a graticule, which was placed over the view-
ing monitor. On the scale, a setting of 100 indicated 100% accuracy in the
judgment of body image, a setting of 50 indicated an underestimation of
body size by 50%, and a setting of 150 indicated an overestimation by 50%.
These settings limited the judgments that could be made. Interpolated be-
tween the extreme of 50 and 150 were graduations that gave a score for the
judgment of body size expressed in terms of percent over- or underestima-
tion (see Fig. 2).

These judgments could be read directly from the scale on the dial or
obtained via a pen recorder. The pen recorder provided a permanent graph-
ic record to complement the photographic record.

A Riken Denshi pen recorder (Model SP-J3) was used to measure the
voltage derived from the apparatus when judgments were made by turning
the control dial. A 100 millivolt range was modified to produce a convenient
scale on the chart and was set at 28 millivolts per division (i.e., equivalent
to 15 mm on the graph paper). The chart paper was type SP-9 to suit the
pen recorder and the paper was set at a speed of 60 mm per minute.

In fundamental terms, chart recorders are electromechanical convert-
ers that convert an electrical signal (in this case the voltage derived from the
camera) to a graph. Thus the width of the image displayed on the video mon-
itor could be read directly from the graph.

The way in which the width of the picture was varied was recorded on
chart paper in the following manner: The width of the image on the monitor
is inversely proportional to the magnitude of the scanning voltage of the
camera. In order not to affect the operation of the camera, the AC voltage
was rectified by a high impedance voltage doubler circuit to produce a DC

![Fig. 2. Photographs from the T.V. monitor of the continuously variable body shape of a
particular subject selected at 70, 85, 100, 115, and 130 percentage points.](image-url)
voltage approximately proportional to the scanning voltage. This voltage was suitably scaled by the pen recorder’s input attenuator to produce a trace of convenient size. The chart scale was calibrated in terms of image width to eliminate any errors in the system.

Procedure

On reporting to the laboratory the females changed into black leotards while the males wore their swimming costumes. They recalled the assistant and stepped onto the rotating platform to be photographed. Subjects stood in the same standard position described in Study 1 while the photographs were taken. Feet were placed on the imprints on the platform and the arms were held by the sides and slightly away from the body at an angle of approximately 25°. The subjects stood full height with eyes slightly raised to look at a fixation point approximately one meter above the camera. The camera was positioned to photograph the full body excluding the head.

After the photographic session the subjects dressed and entered the experimental room where the Polaroid prints were scanned by the video camera and their own images appeared on the television screen. They were then instructed to vary the image on the screen to match their own somatotypes and to indicate how they would like to look. The control dial lacked tactile cues for the correct position corresponding to 100% accuracy and the calibrations were not visible to the subjects. The reliability and validity of this technique has been reported by Collins (1986).

Because of habituation and anticipation effects during the method of adjustment, different starting points in ascending and descending trials were used to counterbalance for series effects. The starting position was set randomly about the veridical, and ascending and descending trials were randomly varied both within and over subjects’ judgments.

Three measures were obtained. The subjective somatotype, the ideal somatotype, and the objective somatotype. The last always equals a score of 100 using this apparatus.

Results

The means and standard deviations for the subjective and ideal judgments are shown in Table IV. Analysis of variance using a repeated measures design revealed a significant effect for sex ($F[1,147] = 76.15$, $p < 0.001$), a significant effect for type of judgment ($F[1,147] = 33.24$, $p < 0.001$), and a significant interaction ($F[1,147] = 40.10$, $p < 0.001$). Males subjectively perceived themselves as larger than they actually were ($t[41] =$
Table IV. The Means and Standard Deviations for Subjective and Ideal Body Images as Estimated on a Television Monitor

<table>
<thead>
<tr>
<th></th>
<th>Subjective</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Males</td>
<td>102.38</td>
<td>11.64</td>
</tr>
<tr>
<td>Females</td>
<td>98.38</td>
<td>11.67</td>
</tr>
</tbody>
</table>

4.16, \( p < 0.001 \) and their ideal somatotype was much larger than their objective size (\( t[41] = 15.56, \ p < 0.001 \)). Females perceived themselves as slimmer than they actually were (\( t[106] = 2.97, \ p < 0.01 \)) and their ideal somatotype was much slimmer than they actually were (\( t[106] = 28.41, \ p < 0.001 \)). These data account for the interaction effect.

There was a significant difference between the males' subjective and ideal somatotype (\( t[41] = 11.40, \ p < 0.001 \)), and between the females' subjective and ideal somatotype (\( t[106] = 25.58, \ p < 0.001 \)).

Perusal of Table IV supports the hypothesis that the subjective body image of adolescents lies between their objective dimensions and their ideal somatotype. It also highlights the statistical finding that males generally prefer to be bigger than they are while females prefer to be slimmer. When the effect of sex on the accuracy of body image was studied, males saw themselves as 2.38% larger than they actually were and females as 1.62% smaller. In terms of absolute differences from their objective shapes there was no significant difference between the accuracy of male or female judgments (\( t[147] = 1.33, \ p > 0.05 \)).

DISCUSSION

In the first study both sexes agreed that the endomorphic body build was the least desired shape. They professed unequivocal aversion to the extremes on the endomorphy scale for all body orientations. This finding confirms previous research. The negative attitudes toward endomorphy expressed by their selections are in congruence with Western sociocultural ideals concerning physical aversions (Caskey and Felker, 1971; Clausen, 1975; Dwyer and Mayer, 1968; Gascaley and Borges, 1979; Lerner, 1969; Yates and Taylor, 1978).

Reference to the objective somatotypes of subjects shown in Tables II and III, and comparison with the somatotype scale shown in Table I, indicates that the mean physique of the male subjects was a balanced average figure. The males' preferred physique was not far removed from this somato-
The females who also had moderate balanced figures indicated a more definite preference to be slim. Evidence from Lerner and Karabenick (1974) suggests that males are less concerned with body attractiveness and more concerned with body effectiveness, whereas females are more concerned with attractiveness and prefer the ectomorphic physique (Caskey and Felker, 1971). Study 2 confirmed this result. An interesting extension of the research reported here could address itself to the relationship between the somatotype of the subject, measured by indices of height, weight, and body mass, and body image measured by the television technology used in Study 2.

A comment needs to be made about the effect of age on body image. Differences among age groups would be expected as young adolescents adjust to their new body dimensions, older adolescents accept their physiques, and young adults become less preoccupied with them. No significant effect was found in the first study. Beit-Hallahmi (1977) argued that studying in tertiary institutions tended to prolong the adolescent moratorium until the age of 30. The use of university students as subjects may have masked any tendency to change over time and should be investigated within the nonstudent population.

In the first study using somatotype cards, males were found to be more accurate than females in the selection of their body proportions. This finding was not replicated using more sophisticated television techniques in the second study. Differences in accuracy of recognition seems dependent on the type of method employed. Using photographic recognition, Collins et al. (1976) found no significant difference between males and females dressed in brief swimming costumes. When photographs of the nude body were used, females were more accurate than males (Collins, 1981). These findings cover all possible outcomes. Other research indicates that males are less concerned with bodily attractiveness than females (Grinder, 1973; Lerner and Karabenick, 1974; Lerner et al., 1973), that males feel better about their bodies than females, and that females profess a strong need to be good looking and popular (Offer et al., 1981). While these attitudinal differences may exist, they do not seem reflected in body recognition. The findings suggest that both males and females are quite accurate in body recognition.

When the focus of attention shifts from accuracy to the direction of error, a more fascinating tendency emerges. The subjective body image tends to lie between objective body proportions and the ideal.

These results suggest that the subjective body image is influenced by the ideal body image. Singer and Lamb (1966) proposed that female adolescents distorted their self-estimates toward the estimates of their ideal figures. The evidence from the present research strongly supports such a view for females. The evidence for males is not as clear-cut. The tendency was there in Study 1 and clearly appeared in Study 2. The more consistent finding for
females probably reflects sociocultural pressures. Unger (1979) reported that the ideal female physique was further removed from the physiological norm of body proportions than the ideal male physique was. The greater concern of the female for attractiveness coupled with the greater discrepancy of the ideal from the norm would increase the psychological valency of the adolescent to perceive the physical self in the direction of the ideal.

The relationship between the individual's objective, subjective, and optative somatotypes is obviously complex and affected by many variables. Research is still at the threshold of our understanding of body image let alone the relationships among objective, subjective, and ideal images. More work is required for, as McCrea et al. (1982) have pointed out, body image refers to the body as a psychological experience, and focuses on the individual's feelings and attitudes toward the body. It is concerned with subjective experiences, the way in which these experiences have been organized and the manner in which they are expressed in interaction with the external environment.

Finally, the technology reported here has wider applicability than the study of adolescent body image. For example, it can be used to study body image distortion in anorexia nervosa or obesity, with drug-induced bodily distortions or in hypnotically induced hallucinations, in narcissistic personality disturbances, in studies of the face, or in body distortions restricted to particular parts of the body such as the abdomen or thighs.

REFERENCES

Recognition Accuracy


