

# Evidence to suggest that nightclubs function as human sexual display grounds

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## Summary

Young, sexually mature humans *Homo sapiens sapiens* of both sexes commonly congregate into particular but arbitrary physical locations and dance. These may be areas of traditional use, such as nightclubs, discotheques or dance-halls or areas that are temporarily commissioned for the same purpose such as at house parties or rock festivals etc. This type of behaviour is seen in a variety of animals although there are no apparent attempts to monopolize particular areas within these locations as is often seen in species that lek. The present studies were conducted in order to investigate this phenomenon in a commercial nightclub environment. Data revealed that more than 80% of people entering the nightclub did so without a partner and so were potentially sexually available. There was also an approx. 50% increase in the number of couples leaving the nightclub as compared to those entering it seen on each occasion this was measured, indicating that these congregations are for sexual purposes. Within the nightclub itself more than 80% of bouts of mixed sex dancing were initiated by a male approaching a female, demonstrating that males are stimulated to approach females rather than vice versa. In consequence, females are placed in competition with each other to attract these approaches. Various female display tactics were measured and these showed that whilst only 20% of females wore tight fitting clothing that revealed more than 40% of their flesh/50% of their breast area and danced in a sexually suggestive manner, these attracted close to half (49%) of all male approaches seen. These data reveal the effectiveness of clothing and dance displays in attracting male attention and strongly indicate that nightclubs are human display grounds, organised around females competing for the attention of males. Females with the most successful displays gain the advantage of being able to choose from amongst a range of males showing interest in them.

**Keywords:** human, sexual behaviour, lekking, dancing, mating strategies.

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## Introduction

Human mating systems are extremely flexible and where environmental circumstances dictate or where resource concentrations limit sole access, humans are seen to arrange themselves into polygynous, monogamous or polyandrous reproductive groupings (Crook & Crook, 1988; Betzig & Weber, 1993). Across the human population as a whole, however, monogamy remains the preferred reproductive organisation (Smith, 1984; Ridley, 1994).

The mate selections of all sexually reproducing species, including humans, are restricted by parental care requirements, the quality of mates that are available and the intensity of competition for access to these. Within these limitations both sexes seek the highest quality mates that are available to them, with quality being assessed on a number of different criteria including displays of apparent genetic fitness (Zahavi, 1975), current disease state (Blount et al., 2003), evident freedom from developmental adversity such as infection, food shortages and parasite infection (Møller, 1992; Møller & Pomiankowski, 1993; Polak & Trivers, 1994; Swaddle & Cuthill, 1994; Simmons & Ritchie, 1996) and/or the likelihood the required behavioural characteristics being expressed. Human females, in common with the females of many other species, are the most selective about whom they consent to mate with as they are the sex that typically makes the greatest parental investment (Trivers, 1972; Hrdy, 1981).

In species such as Red deer (*Cervus elaphus*) males use displays of physical strength and aggression in the rut to gain sole access to groups of females (Clutton-Brock & Albon, 1979). Peacocks (*Pavo cristatus*, Petrie et al., 1991; Petrie & Halliday, 1994), African widow birds (Andersson, 1982), Zebra finches (*Taeniopygia guttata*, Hill, 1991), long-tailed manakins (*Chiroxiphia linearis*, McDonald, 1989) and Birds of Paradise such as *Vidua paradisaea* (Halliday, 1980) gain access to females through displays of ornamentation. Birds such as Sage grouse (*Centrocercus urophasianus*) and Great snipe (*Gallinago media*, Höglund et al., 1992) employ a combination of these strategies, using physical means to gain prime spots within a lekking ground and strutting behaviours, breast sac inflation and the fanning of their tail feathers to attract females to their location (Boyce, 1990).

As a mating tactic lekking is also seen in mammalian species such as fallow deer *Cervus dama* (Langbein & Thirgood, 1989) and insects such as the black swallowtail butterfly *Papilio polyxenes* (Lederhouse, 1982) and

fireflies (Lloyd, 1979). Where males are free from parental investment and do not control resources essential to females, these displays are most commonly organized around male competition for female selection (Höglund & Alatalo, 1995). In cases where males do control resources and/or invest in parental care there can be a development of competition between females.

Examples of female competition for male attention are seen in bird species such as moorhens *Gallinula chloropus* and Eurasian dotterels *Charadrius morinellus* where males provide significant levels of parental care (Petrie, 1989), with the best parental care being provided by those males in the best physical condition (Owens et al., 1994) and insects such as long-tailed dance flies *Rhizophomyia longicauda* where females compete through displays of abdominal enlargement to obtain nuptial gifts of essential protein from males (Funk & Tallamy, 2000; Hockham & Ritchie, 2000). Human males of course often make a significant contribution to childcare and females have a strong preference for those males in possession of economic resources or that demonstrate a potential to obtain them (Buss, 1989; Kenrick et al., 1990, 1996; Townsend & Levy, 1990; Etcoff, 1999). Hence, the conditions at least exist for the development of inter-female competition within our own species.

In this context, it is common for young, sexually mature individuals of both sexes to congregate into particular but arbitrary physical locations and to dance. These may be areas of traditional use (e.g., nightclubs, discotheques or dance-halls) or areas that are temporarily commissioned for the same purpose such as at house parties, rock festivals etc. This type of behaviour is seen in a variety of animals although there are no apparent attempts to monopolize particular areas within these locations as is often seen in species that lek. The following studies were conducted in order to investigate patterns of behaviour within a commercial nightclub environment.

## Methods

Observations were made from a balcony area roughly 4 m above a 225 m<sup>2</sup> dance-floor area in 'Majestyk's' nightclub, Leeds, UK. This position was chosen because it provided an uninterrupted view of the dance floor, was dimly lit and was commonly used by the clientele to watch people dancing.

The location itself, therefore, served as a 'hide', as did the age and attire of the observers which were similar to those of the people frequenting the nightclub.

Coded verbal commentaries were recorded in real-time using a mini-cassette dictaphone (concealed inside a handbag) with a tie-microphone threaded beneath the clothes and attached to the sleeve-cuffs using the following ethogram and transcribed later for subsequent statistical analysis. As data were collected live and in real time, observers were trained using a combination of pre-recorded material and live rehearsal sessions until they had consistently reached 95% inter- and intra-observer reliability.

Peak capacity of Majestyk's was reached between 23.30–02.00 h and so all observations were made within this period. Thirty different visits were made and total observation time was approx. 70 h. The observation technique used by the trained observers was to focus on one female for a maximum of 45 min or for shorter periods if observation sessions were ended because they remained out of sight for more than 1 min, they left the dance floor or for ethical reasons because they had reached a high level of intimacy with a male. Behavioural invitations to approach (eye contact, smiles, hand gestures etc.) were not recorded as they could not be reliably measured from a distance. Similarly, intrinsic variations in physical beauty were not taken into account as these are sensitive to the personal preferences of both the observer and the males within the nightclub environment. Subjects were, therefore, chosen in a quasi-random manner solely on the basis of their clothing and/or dancing style. There was never any contact between the observers and the observed.

For that part of the study solely concerned with the initiation of mutual dancing bouts the behaviour of 126 male/female pairs was recorded. For that part where female clothing and dance displays were examined, the behaviour of 90 females was recorded in detail. Everyone within the nightclub was over 18, as required by UK licensing laws and as strictly enforced by the door supervisors.

All studies were approved by the Ethics Committee of the Institute of Psychological Sciences, University of Leeds in accordance with the ethical guidelines laid down by the British Psychological Society.



**Figure 1.** Assessment of amount of flesh left exposed by clothing. Amount of exposed flesh was quantified using a nominal percentage assigned to different body areas, indicated by the areas of light and grey ('10%' per band on the body, '5%' per band on each appendage). The female in this example is exposing approx. 50% of her flesh.

### *Ethogram*

#### Clothing display

*Overall flesh exposure:* A nominal score of '10%' was given for each of the body areas detailed in Figure 1 that were left uncovered by clothing. Zones on each arm or leg were scored as '5%' each. Hands and feet were not included in this analysis as all those observed wore shoes and none wore gloves.

*Breast exposure:* Flesh exposure in the breast area was assessed using the notional grid detailed in Figure 2. How low-cut the clothing was assessed on the y-axis using a 5 point scale (0–4). How much cleavage being revealed was assessed on the x-axis using the area bound by the same numbers (1, 1; 2, 2, etc.) again on a 5 point scale (0–4). These scores

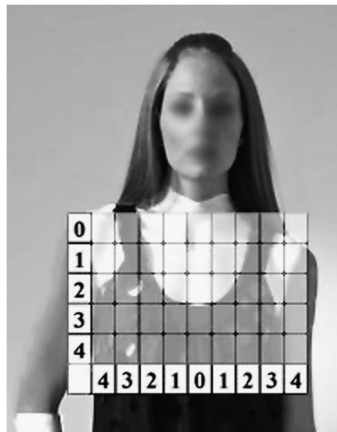
were combined to give an overall estimate of the breast area being exposed.

*Fit of clothing:*

- 0 Both top and bottom clothing loose fitting
- 1 Skirt or trousers tight-fitting. Top loose fitting
- 2 Top tight fitting. Skirt or trousers loose fitting
- 3 Both top and bottom clothing tight fitting

Dancing display

- Inactive Female standing still, possibly engaged in other activities such as talking
- Gentle Low intensity side-stepping or hip swaying in time to music
- Active Low intensity whole body movements corresponding to tempo and rhythm of music
- Highly active High intensity whole body movements corresponding to tempo and rhythm of music



**Figure 2.** Assessment of flesh exposed in the breast area. Area of exposed flesh in the breast area was estimated by the depth of the cut of the clothing on the y-axis and the amount of cleavage shown using the area bound by the same numbers on the x-axis. The area left exposed was expressed as a 'percentage'. The female in this example is exposing approx. 30% of her breast area.

Sexual	Whole body movements incorporating slow rhythmical movements of pelvis and self-touching of upper thigh, hips and/or breast area
Intimate	Same as sexual dancing but directed to partner (male or female within 50 cm and either facing subject, synchronising their own movements with subjects or being held by/holding subject). Observations were terminated when this behaviour was seen on ethical grounds.

Male approaches were recorded each time a different male came within 50 cms of the female under observation and directed his dance movements towards her.

## Results

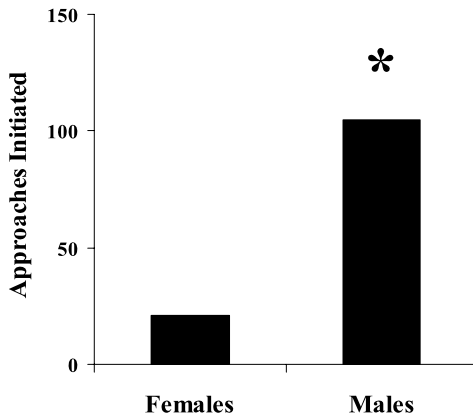
### *Nightclubs as places to seek access to mates*

Observations of all clientele entering the nightclub on a particular Saturday night revealed that of the 1014 males and females that did so only, 196 (19.3%) appeared to be part of a couple (as determined by observations of unforced proximity and behaviours such as handholding, kissing etc.). These findings indicate that within the limitations of this direct observational analysis technique, more than 80% of the nightclub population were without a partner present and hence potentially sexually available. Similar findings were obtained on three further occasions with additional counts of couples leaving the nightclub revealing an increase in the order of 50% over the number that entered. These data are summarized in Table 1.

**Table 1.** Couples entering and leaving Majestyk's nightclub, Leeds, UK

Observation day	Couples in	Couples out	Change (%)	$\chi^2$
Saturday	98	148	+49	18.88*
Saturday	104	161	+55	24.52*
Tuesday	49	80	+63	7.42*

Data are expressed as numbers of couples entering and leaving Majestyk's nightclub, Leeds, UK on three different occasions. Data demonstrate that there is a consistent and significant increase in the number of couples leaving the nightclub (Couples out) over the number of couples entering the nightclub (Couples in) and indicate that males and females are pairing up within the nightclub environment. \* $p < 0.01$ .



**Figure 3.** Number of each sex initiating bouts of mutual dancing. Data are expressed as frequency counts and demonstrate that it is largely males that approach females in order to initiate these bouts of mutual dancing. \* $p < 0.05$  from females.

### *Initiating the dance*

Analysis of 126 bouts of mutual dancing where the initiation was seen demonstrated that 105 were initiated by a male approaching a female, whereas, only 21 were initiated by a female approaching a male ( $\chi^2 = 56.0$ ,  $p \leq 0.01$ ). These data indicate a major sex-difference in approach behaviour and reveal that males are far more stimulated to approach females than females are stimulated to approach males. These data are presented in Figure 3.

### *Displays to stimulate male approaches*

Following on from these observations detailed measures of both clothing and dance displays were recorded in a further 90 females. Clothing was assessed on three dimensions; the tightness of fit; the amount of flesh being exposed and the amount of breast area being exposed. Dancing was assessed as 'no dance' movement, rhythmic movements of various energy levels and sexually suggestive dancing. Data were analysed using analyses of variance with orthogonal contrasts as follow-up tests as appropriate. Correlational analysis was also performed on each of the three dimensions described above.

Many clothing/dance combinations were not seen on any of the nights when observations were made rendering global analysis impossible. Therefore, the component experiments relating to clothing and dance were analysed independently.

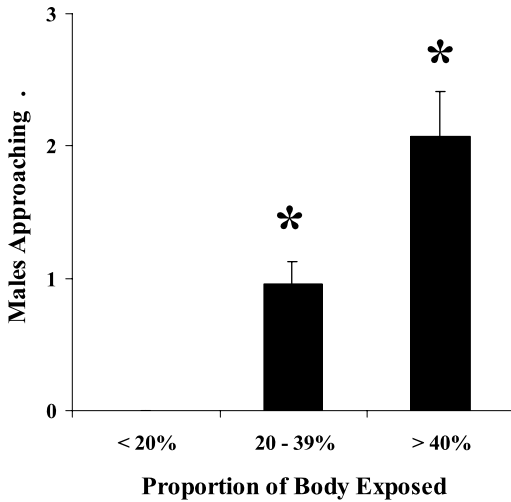


## Clothing

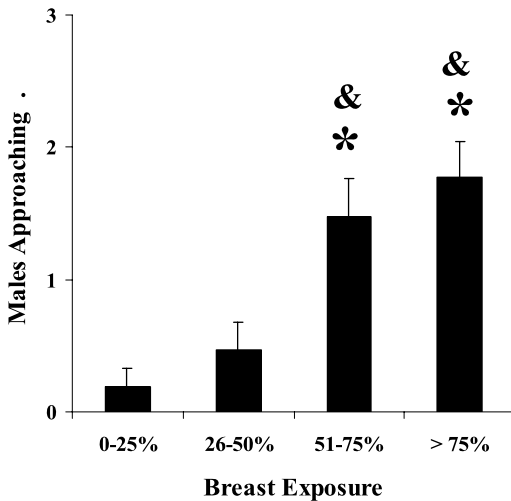
With regard to the tightness of clothing fit, this did not have a significant effect on the number of male approaches, although there was a clear trend ( $F_{2,87} = 2.75$ ,  $p = 0.069$ ) which follow-up tests revealed to be due to females with both upper and lower body clothed in tight fitting clothes attracting more male approaches than those that wore loose fitting clothes on the top half ( $F_{1,87} = 5.17$ ,  $p = 0.025$ ). No women wore loose fitting clothes on both top and bottom. The tightness of clothing and male approaches were also significantly correlated ( $r = 0.24$ ,  $p < 0.05$ ).

The amount of flesh exposed was assessed using the method described above, however data were not fully distributed across the various categories employed. Therefore, for analytical purposes females were categorized into those exposing less than 20% ( $N = 12$ ); those exposing between 20–39% ( $N = 51$ ) and those showing more than 40% flesh exposed ( $N = 27$ ). No females exposed less than 10% flesh and no female exposed more than 50%. The number of males approaching each female was then measured over each observation period. ANOVA revealed a significant effect of flesh exposure ( $F_{2,87} = 12.7$ ,  $p = 0.000001$ ) which was due to greater numbers of male approaches as flesh exposure increased (<20% vs 20–39% ( $F_{1,87} = 5.47$ ,  $p = 0.022$ ); 20–39% vs >40% ( $F_{1,87} = 13.6$ ,  $p = 0.0004$ )). This near linear relationship was also significantly correlated ( $r = 0.47$ ,  $p < 0.05$ ). These data are presented in Figure 4.

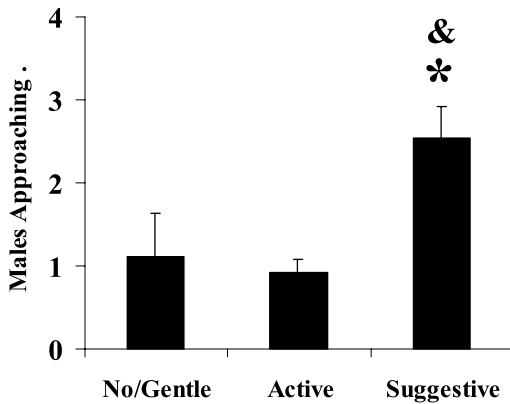
Data concerning breast areas exposed were expressed as percentages and placed into one of 4 categories (<25%, 26–50%, 51–75% and >75% of breast area exposed). No women displayed all of their breasts and the nipples were covered in all cases. Analysis of variance indicated there to be a significant effect of breast exposure ( $F_{3,86} = 7.76$ ,  $p = 0.0001$ ) which follow-up tests revealed to be due to more males approaching those exposing between 51–75% ( $F_{1,86} = 8.99$ ,  $p = 0.003$ ) and >75% ( $F_{1,86} = 16.7$ ,  $p = 0.0001$ ) of their breast areas compared to those exposing less than 25%. More males also approached those showing 51–75% ( $F_{1,86} = 5.66$ ,  $p = 0.02$ ) and >75% ( $F_{1,86} = 11.77$ ,  $p = 0.0009$ ) compared to those that exposed 26–50%. Breast exposure and male approaches were also significantly correlated ( $r = 0.42$ ,  $p < 0.05$ ). These data are presented in Figure 5.



**Figure 4.** Male approaches to females displaying various amounts of flesh. Data are expressed as means  $\pm$  SEM and show that male approaches are strongly influenced by the amount of flesh females expose. No females displayed less than 10% or more than 50% of their bodies. \* $p < 0.05$  from females displaying less than 20% flesh.



**Figure 5.** Male approaches to females displaying various amounts of breast area. Data are expressed as means  $\pm$  SEM and show that male interest is related to the amount of breast area females expose. No females displayed all of their breasts and nipples were covered in all instances. \* $p < 0.05$  from females displaying less than 25%; & $p < 0.05$  from females displaying 26–50% of their breast area.



**Figure 6.** Male approaches to females dancing in various ways. Data are expressed as means  $\pm$  SEM and show that male interest is related to the amount of time females spent dancing in a sexually suggestive manner. \* $p < 0.05$  from females not dancing/gently swaying; & $p < 0.05$  from females actively dancing.

### Dance

For this analysis females were assigned to the category of dance they spent most of the observation period engaging in. These were; Not dancing/gentle swaying (Inactive/Gentle); Active dance (Active/Highly active) or dancing in a sexually suggestive manner (Sexual/Intimate). This analysis revealed a significant main effect of type of dancing ( $F_{2,87} = 7.98$ ,  $p = 0.0007$ ) which was due to higher levels of male approaches towards females who spent most of the observation period dancing in a sexually suggestive manner compared to those not dancing/gently swaying ( $F_{1,87} = 6.09$ ,  $p = 0.015$ ) or in the Active dancing category ( $F_{1,87} = 15.94$ ,  $p = 0.00014$ ). Male approaches were also significantly correlated with the amount of time females spent dancing in a sexually suggestive manner ( $r = 0.53$ ,  $p < 0.05$ ). These data are presented in Figure 6.

### Clothing/dance combinations

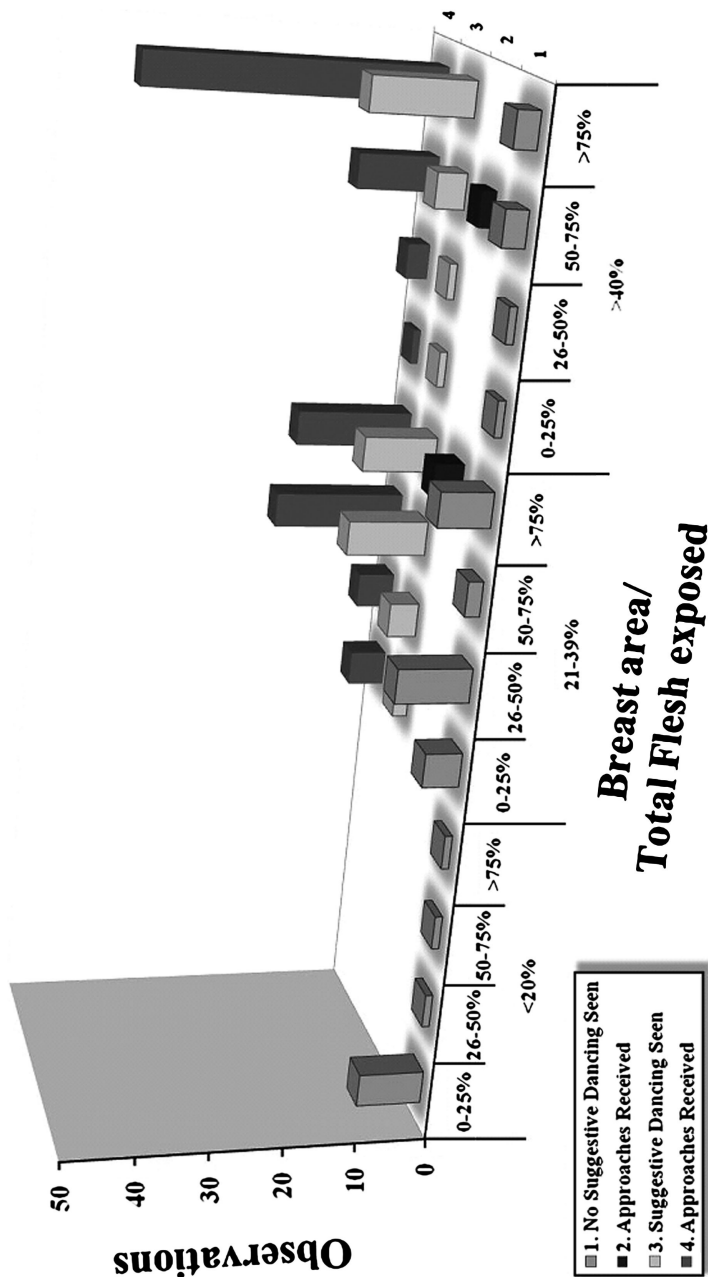
As stated above, multifactorial ANOVA could not be performed in view of the large number of combinations that were not observed. This in itself is of interest as it indicates that the selection of display tactics employed by females is not random. Only 9 (10%) elected to expose less than 20% flesh, less than 25% of their breast area and not to engage in sexually suggestive dancing. These females failed to attract any male approaches. Similarly, the

43 women (48%) that failed to show any sexually suggestive dancing attracted just 6 (6%) male approaches. By contrast, the 47 women (52%) that did show sexually suggestive dancing for at least part of the observation period were approached 100 times (94%). Within this group, the 15 women that made the most intense displays (tight clothing top and bottom, more than 40% flesh exposure, more than 50% breast exposure and dancing in a sexually suggestive manner) attracted 40 male approaches (38% of all approaches observed). With the addition of the 3 women in the same categories with the exception of having a tight top, rather than a tight top and bottom this figure is increased to 49%. As such, the, 20% of the observed population making the most intense display combinations of flesh/breast area and dance attracted close to half of all male approaches observed. These data are presented in Figure 7.

## **Discussion**

The present studies were conducted in order to investigate the hypothesis that the behaviour of young, sexually mature humans congregating in locations such as nightclubs represents a form of sexual display. The results of this analysis revealed that most people arriving at the nightclub location used for these studies did so without an apparent partner and so were potentially sexually available. In keeping with this, there was a net gain of around 50% of mixed-sex couples leaving the nightclub observed on all occasions that this was recorded. In the absence of direct observations of sexual activity (which was clearly not available) it cannot be unequivocally stated that these pairs were formed for mating purposes. However, as people in couples were, by definition, showing clear signs of intimacy (unforced close proximity, handholding, kissing etc.) this interpretation remains a strong possibility. Therefore, current data show that nightclubs are places where special behaviours are exhibited and where significant numbers of new couples are formed. These locations are, therefore, at least functionally homologous to sexual display grounds as used by a variety of other species.

With regard to the nature of these displays, human males commonly invest in child rearing and females show strong preferences for resource holding males (Buss, 1989; Kenrick et al., 1990, 1996; Townsend & Levy, 1990; Etcoff, 1999). Hence, the expectation was that competition for the attentions



**Figure 7.** Male approaches to females using various combinations of clothing and dance displays. Breast area exposed is indicated on the upper x-axis, total flesh exposed is indicated on the lower x-axis. Data are expressed as frequency of females observed in each clothing/dance combination (rows 1 and 3) and the frequency of approaches directed towards these females (rows 2 and 4). The combined effects of clothing and dance can clearly be seen in those females who were observed dancing in a sexually suggestive manner whilst displaying more than 40% of their flesh and more than 75% or their breast areas. The 14 (16%) women in this category attracted 38% of all approaches seen to be made. Only 6 approaches in total were directed towards the 43 women (48% of the sample) who did not dance in a sexually suggestive manner.

of the opposite sex would be strongest amongst females and indeed data did demonstrate that mixed-sex dancing pairs were formed most frequently as the result of a male approaching a female, thereby placing females in competition with each other to attract these approaches. Factors found to stimulate approach behaviour in males included tightness of fit of the females' clothing, how much flesh their clothing revealed and the amount of breast area that was exposed. Dancing in a sexually suggestive manner was also an important factor. Females that wore combinations of clothing that revealed very little flesh or breast area attracted very few approaches by males and those that wore more revealing clothing and danced in a sexually suggestive manner attracted the most. These data clearly show that males are sensitive to differences in the way that females dance and dress and strongly indicate that these displays are a means by which competition between females may be effected.

In Western societies sexually mature females use non-verbal facial expressions to signal their interest in a male (Moore, 1985; Moore & Butler, 1989) and physical displays where they frequently seek to enhance their appearance using make-up, elaborate hair styling, adornments such as jewellery and devices that draw attention to the breasts and/or buttocks such as bras, low cut tops and high heeled shoes (which force a body posture that protrudes these).

As nightclubs are usually crowded, deliberately darkened and noisy to the point where conversation is difficult, these locations create pressures for physical displays to become more exaggerated and for females to more obviously exploit the male propensity to be attentive to areas of exposed flesh and breasts (Etcoff, 1999; Thornhill & Grammer, 1999; Grammer & Renninger, 2004). This is reflected in the present study where females that wore the most revealing clothing gained the most male attention. There are however limits to the advantage to be gained by showing more and more flesh which prevent these signals becoming 'runaway'.

That is, there is a threshold of flesh exposure beyond which further exposure no longer increases attractiveness to males (Williamson & Hewitt, 1986) as the signal changes from 'allure' to one indicating general availability and future infidelity (e.g., Buss & Schmidt, 1993). Further, this may act as a false indicator of current sexual availability and so is restrained by the range determined by an individual woman's usual rape-avoidance strategies (Whatly, 1996; Koukounas & Letch, 2001). Therefore, once the limit of advantage to be gained by flesh exposure has been reached, other strategies must be used

to increase the intensity of displays and this may be where different dance displays are employed.

In the present studies, the effects of type of dance display used was clear and powerful, with nearly all male approaches being directed towards females that had shown some dancing in a sexually suggestive manner and very few being directed to those who failed to exhibit this. As such, it is possible to interpret the sexually suggestive dance display as a signal to males of a females' willingness to be approached. From the males' perspective it would be important for them to be sensitive to such signals in view of their greater urgency for sexual activity (Clarke & Hatfield, 1989; Fiengold, 1990; Herold & Mewhinney, 1993; Miller, 2001) and the relative paucity of opportunity (Emlen & Oring, 1977). Females nonetheless remain the selecting sex and gain the clear advantage of choice when approached by several males during the course of a dancing bout. Males stimulated to approach these females are, therefore, merely offering themselves up for selection.

Current data do not provide any information as to the characteristics females use to accept or reject approaches from males. However, it is clear that males and females dance in similar ways and so male dances do not appear to be the displays of strength and stamina seen in tribal and folk dancing (e.g., Sachs, 1973). Whilst dance could also be used to display symmetry (Brown et al., 2005) this suggestion must be placed in the context of crowded dance floors that offer very little space to make complex physical displays or the opportunity for females to be at sufficient distance to fully appreciate them if they were made. Therefore, it remains entirely possible that the dancing itself is only of secondary importance within this context. As males approach females in the main it is likely that females make their decisions about whether to accept or reject that approach on the basis of a rapid assessment of the males' physical appearance (which signals the same characteristics of genetic fitness, disease state, freedom from developmental adversity etc. as it does in other species) including their clothing. Indeed, preliminary studies have shown that female decisions to accept or reject male approaches are greatly influenced by relative height and physical build (Hendrie et al., 2008).

Females with the most successful displays also gain an insight into the personality characteristics of the male approaching them based on their behaviour only. That is, whilst all males approaching females accept a risk of rejection those males approaching females that are making the most intense

displays may face a higher risk given the likelihood of that female attracting further male approaches. Males within this context are, therefore, clearly equipped with the self-confidence to accept this risk, which may in turn be a behavioural indicator of dominance and/or potential resource holding ability. As mentioned above, studies are currently underway to further examine the basis on which females make their decision to accept or reject the males they are approached by.

In conclusion, present findings clearly show that nightclubs have many features seen on the sexual display grounds of a variety of species. That is, they are in the main populated by young, sexually mature individuals of both sexes, they are places where special behaviours are exhibited and where pairs formed. Within these display grounds, females compete amongst themselves for male attention using clothing and dance. The most successful displays in this context were those that combined exposing the most flesh/breast area with sexually suggestive dancing. Females that become skilled in making these displays gain the advantage of being able to choose the highest quality male from the range stimulated to approach them.

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