WEIGHTED KOPPA: A STATISTIC TO CONSIDER PREDICTED SKEWNESS

Godfrey J. Ellis, Oklahoma State University
Louis N. Gray, Washington State University
Carol A. Hickman, Washington State University

There are many measures of association that the social scientist can use to analyze data. They all have certain advantages and disadvantages, and researchers may limit their choice of measures of association to those computed in the Statistical Package for the Social Sciences (SPSS) "crosstabs" program. This may produce a myopic view of statistics. The measure of association should be chosen for its potential to answer questions, not because of its availability.

A statistic known as "koppa" (or little q) developed by Kruskal in 1958 is easy to use because of its extreme simplicity. One could speculate that koppa has been ignored because it is too simple. Koppa is defined as: ". . .the number of concordant units minus the number of discordant units divided by the total number of units. Thus, it is the difference between the proportion consistent minus the proportion inconsistent." (Frideres et al. 1971, 108)

The choice of a cutting point for each variable is: ". . .somewhat arbitrary, but a rather natural one is to take. . .the median" with 2 x 2 tables (Kruskal, 1958, 810), hence the term "coefficient of medial correlation." Koppa may be written as the probability set:

$$Pr (X \ x_0 \text{ and } Y \ y_0) \text{ or } (X \ x_0 \text{ and } Y \ y_0) \quad 1.1$$

where x_0 and y_0 are the cutting points. The computational formulas are:

$$q = \frac{\text{concordant} - \text{discordant units}}{\text{concordant} + \text{discordant units}} \quad 1.2$$

for the 2 x 2 case: $q = \dfrac{(a+d) - (b+c)}{a+b+c+d}$ \quad 1.3

where:

	X		
	below median	above median	
below median	a	b	a+b
Y above median	c	d	c+d
	a+c	b+d	n

A simple example: in one situation an anthropologist listed names of 30 societies in cell format to demonstrate a relation between political structure and severity of socialization (Stephens 1963, 372). However, no measure of association was given. A simple computation revealed the association was relatively strong (koppa = .47).

Although originally formulated as a "quadrant association" for 2 x 2 tables, the logic of koppa can be extended to j x k tables with cutting points which divide variables into roughly equal marginals (Kruskal 1958, 819; Hildebrand 1977, 25). The only need is a basic theoretical prediction rule defining success (concordance or continuity) and failure. If one's theory predicts a non-linear relation, koppa can still compute a measure of association. For example, where X indicates success

		X	
	1	2	3
1	X		X
Y			
2		X	

There has been increasing attention directed to Kruskal's koppa: in an analysis of social constraints on attitudes and behaviors (Frideres et al. 1971); in development of a test for significance of difference between two koppas (Warner & Gray 1973, 1978); and in a text on ordinal level analysis (Hildebrand et al. 1977). More work of this kind is needed.

A problem with koppa, as with most measures of association, is susceptibility to skewed marginals (Reynolds 1977, 17). Skewness affects the numerical value of koppa. To illustrate we will use hypothetical data with extremely skewed marginals:

	X		
	1	2	
Y 1	95	1	96
2	1	3	4
	96	4	100

Computing the koppa of these data yields a coefficient of .96 which is uninterpretable. A glance at the table shows that variables X and Y are not related to this degree. The spuriously high koppa is due to skewed marginals. Reynolds comments that: ". . . an investigator has to pay particular attention to marginal totals. When one or both variables are highly skewed, he should decide whether or not the relative absence of variation is substantively meaningful. If he wants to know what more even distributions would produce, he can adjust the observed data . . . or select a less sensitive measure. . . On the other hand, the lack of variation may itself be theoretically important and in that case, he would want to preserve the original marginal distributions" (1977, 17; emphasis added). While the problem is legitimate, Reynold's solution is less than ideal. He appears to advocate a post hoc decision rather than an a priori control. Retaining skewed marginals is a crude way to handle data which is predicted by theory to have unequal marginals. As Cohen points out: ". . . the weights are part of any hypothesis being investigated. An obvious consequence of this is that the weights, however determined, must be set prior to the collection of the data" (1968, 215).

There are many instances where theory would predict skewed marginals. However this should be controlled by weighting rather than by letting the measure of association be affected by the data. Skewed data should always be standardized, even when the skewness was predicted. As a second step, the table may be weighted as required by an a priori theory.

One of the simplest ways to standardize or "smooth" a table is to compute percentages and treat these as raw frequencies (Reynolds 1977, 18). Whether one standardizes on variable X, variable Y, both variables, or iterates until all the marginals are approx-

imately 100 will depend on one's standards or one's theory. For the present example, computing percentages on X or Y will be the same:

	X		
	1	2	
Y 1	98.96	25.0	123.96
2	1.04	75.0	76.04
	100.0	100.0	200.0

$$q_s = \frac{173.96 - 26.04}{200} = .74$$

The result of standardization is to reduce the value of koppa, in this example, from .96 to .74, or a decrease of .22.

If skewed marginals are predicted by theory it seems reasonable to weight for this. In the example; variable X, category 1 may be single college students and category 2 may be married college students; or category 1 may be those with an I.Q. above 100 attending college and category 2 may be those college students with an I.Q. below 100. In either case, the researcher would predict the marginals to be unequal. One might weight "success" cells appropriately. Weighting koppa is relatively straightforward. As Cohen puts it: ". . . These weights can be assigned by means of any judgment procedure . . . In many instances, they may be the result of a consensus of a committee, of substantive experts or even, conceivably, the investigator's own judgment" (1968, 215). To weight the X variable, one standardizes the table, multiplies the "success" cell(s) by some whole number greater than zero, and computes koppa with the resulting n. The formula is:

$$q_w = \frac{(w_1a + w_2d) - (w_3b + w_4c)}{n + a(w_1-1) + d(w_2-1) + b(w_3-1) + c(w_4-1)} \quad 1.4$$

where w = weights assigned and the table format is 2 x 2. There is no intuitive reason why the weighting scheme cannot be extended to j x k tables, with varying weights, depending on the sophistication of the theory. The formula is less complex than it

appears, and generally reduces to a simple computation. In the present example, if one expects four times more married respondents than single respondents then $w_1 = 4$ and w_2, w_3, and $w_4 = 1$. The generic formula reduces to:

$$q_w = \frac{(4a+d) - (b+c)}{n + 3a} \qquad 1.5$$

The table changes to:

		X		
		1	22	
Y	1	395.84	25.0	420.84
	2	1.04	75.0	76.04
		396.88	100.0	496.88

and koppa is:

$$q_w = \frac{470.84 - 26.04}{496.88} = .90$$

which is an increase from q_s (.74) of .16.

Note that the degree of weighting is not an arbitrary decision. There must be a clear theoretical rationale for the weight assigned. Many theories can supply such a rationale. In this example, we assume a rationale which demands a weight of 4 applied to cell a. If the cell had been weighted by 2 or 10, koppa would, of course, be different. However, the change is koppa would not be extreme since, with every increase in a weighted cell, the n increases correspondingly. Because of this, koppa retains a range of +1 to -1.

In summary, the effect of standardizing and weighting can be illustrated by comparing the three koppa coefficients:

1. raw data: $q = .96$
2. standardized but unweighted: $q_s = .74$
3. standardized and weighted: $q_w = .90$.

When koppa is computed from data with highly skewed marginals, it is uninterpretable. Therefore, skewed data should always be standardized which removes the effects of skewness. However, if the theory predicts a degree of skewness or unequal marginals, then it makes sense to put back in the amount of skewness which the theory

would predict by an appropriate weighting decision. In this way, koppa becomes more accurate and flexible while retaining its simplicity.

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SUBLIMINAL SEDUCTION: POPULAR
VOCABULARIES OF MOTIVE AND THE
MYTH OF THE MENTAL MASSEUSE

Ronny F. Turner   Colorado State University
Charles Edgley   Oklahoma State University

INTRODUCTION. In recent years we have
seen rekindled the concern of the 1950's
that the buying behavior of the average
American is being subliminally manipulated
by the mass media via hidden persuaders
(Packard, 1957). The media, following
McLuhan's well-known thesis, brings us not
only messages but also massages our psyches
and arouses our "unconscious libidinal
drives" in a successful effort to sell us auto-
mobiles, liquor, cigarettes, and soap flakes
(McLuhan, 1965, 1968, 1969; Key, 1973,
1976). Advertising agencies, capitalizing on
the wide-spread belief that people's minds
can be manipulated, have sold ad copy
allegedly composed of hidden persuaders
to businesses for handsome prices, promising,
with expansive rhetoric, an increase in sales.
    The concept of "subliminal advertising"
is rooted in a traditional philosophical per-
spective in causality in which the mind is
construed as the primary cause of behavior,
albeit buffeted by outside forces, precipi-
tating factors, and environmental events.
With the exception of a few behaviorist and
social behaviorist perspectives, the assump-
tion that minds produce or cause behavior
is commonly accepted in the social sciences.
Rarely does one encounter theorists who
raise serious questions about the assumed
causal status of the mind, or, as Gilbert Pyle
puts it, the official doctrine of "the ghost
in the machine" (Pyle, 1949; Blumet, 1964;
Szasz, 1961; Brisset & Edgley, 1975).
    The social sciences, particularly social
psychology, have contributed to the popular
view of the mind by a more-or-less continual
quest for answers to the question: "What
causes behavior?" This quest, spurred by a
positivistic conception of social psychology,
has been based on a mechanistic metaphor
that views man-in-society as basically like
the components of a machine, his actions
being outcomes of determinate processes in
the world at large and/or results of the
action of a "conscious," "unconscious,"
"subconscious," or "preconscious" mind
within.

A SOCIOLOGICAL VIEW OF MOTIVATION
The view of motivation that informs specula-
tions about subliminal advertising is dis-
tinctly psychological. Motives are regarded
as causes of behavior: "triggers" which ener-
gize the passive organism to overt action.
The tack we wish to take here, however, is
based on a sociological theory of motivation
which avoids the imputation of "mind," in
the various ways it has been subdivided, as
a "force" which propels human action.
Instead of causes, motives are seen as rheto-
rics through which a social actor interprets
his conduct to others. This perspective
derives primarily from John Dewey's action
philosophy which needs no "forces" to moti-
vate already existing action (Dewey, 1922,
112): "In truth, man acts anyway, he can't
help acting. In every fundamental sense,
it is false that a man requires a motive to
make him do something. . .While a man is
awake he will do something, if only to build
castles in the air. . .It is absurd to ask what
induces a man to activity generally speaking.
He is an active being and that is all there is
to be said on that score."
    The most systematic statement of mo-
tives as communication is found in the
much-neglected work of Kenneth Burke
(1945, 1950). In 1940, C. Wright Mills
adapted Burke's work to a sociological con-
text, suggesting that motives are organized
into "vocabularies" which vary historically
and culturally, forming a basis for social
organization by rendering action under-
standable to both the actor presenting the
motive and the audience reviewing it. In
this sense, motives do not compel us to act,
they enable us to act, and an understanding
of these rhetorics necessarily involves not
only those motives which begin an action,
but also those which sustain and terminate
interactional episodes. This point of view on
motives has been amplified in recent litera-
ture by Peters (1960), Blum and McHugh
(1968), and Scott and Lyman (1971).
    The dismissal of causation as relevant for
social psychology has engendered the most
severe criticism, and perspectives such as
dramaturgical analysis which dispense with

causation are routinely dismissed as "unscientific." (Goffman, 1959; Edgley and Turner, 1975.) However, the best critique of traditional social science views of motivation is offered not by a social psychologist, but by an action philosopher named A.R. Louch (1966). Louch constructs a devastating logical critique of the social sciences, focusing on its incredible view of motivation.

Louch begins by noting that motives are ascribed to individuals in situation entitling them to act. They do not impel people to act, however, they entitle them to do so, this "certification to act" stemming from the definition of the situation. But in most varieties of social science, motives are construed as coercive forces and are given two quite incompatible meanings: first they are used to describe a certain sequence of behaviors (which is reasonable), but are then used secondarily as an explanation for the same sequence. Obviously, the term motive will simply not stand this kind of abuse. Such circularity is standard procedure in social science due to its deterministic view of motives as causes, which assures that triviality, redundancy and tautology will be the outcome of most behavioral science research.

Given this critique of conventional motive schemes, and the outline we have sketched for what we consider to be a more appropriate view of how motives work in human affairs, considerable insight can be gleaned from applying this view to the notion of subliminal advertising. That subliminal advertising can seduce the "unconscious" section of the mind into purchasing commodities is one of those trivial tautologies which has been exploited by some entrepreneurs as a vocabulary of motives to justify, make credible, and create a demand for subliminal advertising.

WHAT IS SUBLIMINAL SEDUCTION?

Subliminal refers to "below the limen" or threshold. Subliminal seduction is characterized, then, by overt behavioral responses (buying) being determined by stimulation below the threshold of conscious awareness. Unconscious defense mechanisms (repression, fantasy, projection, sublimation, etc.) which govern perception and motivation are being titilated and massaged by hidden manipulators in advertising copy; the consumer is unaware of the stimulus prompting the response or the relationship between stimulus and response. However, the consumer may be aware of some unexplained good feelings, sexual stimulation, etc. from viewing the advertisement, but is unaware of the subliminal stimulus and the relationship between the stimulus and his response.

This view that advertising influences people is based on a large body of literature in behavioral psychology concerning the influence of stimulation on overt action (Dixon, 1971). Many definitions, perspectives and controversies concern stimuli and response, conscious and unconscious thresholds. The "subliminal seduction" campaign that has been created and sold by advertising agencies is a quixotic mix of Freudian ideas, perception psychology, neurophysiological data, and speculations about how the mind works.

In the subliminal seduction thesis, there is an assumption of how minds work, although the admission is made that the question of how minds work has never been satisfactorily answered (Wisdom, 1978). Even with an admitted lack of knowledge of how the mind works, those who sell subliminal advertising tell us how minds work unconsciously. The unconscious, by its own definition is below consciousness and therefore unknowable, is however, supposed to be manipulated by cunning advertising men who miraculously have knowledge of the unconscious, and how to facilitate fantasy. The unconscious, seen as the most basic and emotional part of the mind, is a rich storehouse of the basic attitudinal and perceptual frames of reference--a house to be broken and entered. The unconscious is imputed to be superior to the conscious mind in many respects; it is more comprehensive and rapid in its performance, missing virtually nothing among the innumerable stimuli that are seen to bombard it constantly. The unconscious has ultimate control over the conscious and is said to possess a more extensive repertoire of symbols.

The significance of the unconscious in the subliminal thesis is necessitated by the fact that once a subliminal message is deciphered

or made apparent to the conscious mind, its influence, impact, and manipulative potential is lost. Why the unconscious mind refuses to be directed by "unseen manipulators" that have been discovered by the conscious mind is neither questioned nor answered. The "two-minds" thesis works as a convenient tautology to "explain" both normal and abnormal behaviors which have no apparent cause. As the unconscious became an accepted rhetoric for many behaviors, it lost its metaphorical emphasis and became reified as a cause of those very same behaviors used to infer its existence initially. Szasz has carefully exployed the historical transition of mind, mental states, and mental illness from metaphor to myth, demonstrating how behavioral descriptions were spuriously converted into their own causes.

In the unconscious mind reside the imputed targets of subliminal advertising: human drives such as sex, hunger, aggression, thirst, territoriality, etc. These drives are alleged to be extremely vulnerable to subliminal seduction. Hidden persuaders deviously facilitate fantasies, trigger fears of rejection, and exploit a host of mental processes to solicit surreptitiously the purchase of an advertised commodity.

THE VOCABULARY OF SUBLIMINAL MOTIVES. The vocabulary of subliminal symbols postulated and then used in advertising is unending; the repertoire of seductive symbols range in impact and capability from slight sensuous stimulation of the errogenous zones of the mind to calculated rape. Designed into autos, cosmetics, packaging, and ad copy, the subliminal symbols comprise a foreign language of the conscious mind; however, the unconscious allegedly interprets the words or objects in its own way. It is this unconscious dictionary to which subliminal advertising is supposedly directed.

Several examples will serve to make the point. The word "taste," which is empasized in most cigarette advertisements, is read by the conscious mind to mean that brand X has better flavor than brands Y or Z. But, the unconscious mind sees "taste" as "testes," a genital word providing for fantasy, stimulation and an overwhelming interest in the product. Likewise, a "pint" of gin or bourbon

comes through on the unconscious printout as "penis," "whose" reads "whore," "come-on" reads semen, etc. Being sensuously aroused by such covert sexual language, the unconscious supposedly motivates an affinity for the product advertised in the context of what would be to the conscious mind "dirty language." The unconscious inherently has its "mind" on the base side of human nature wherein it finds thrills and satisfaction; likewise, the unconscious deviously manipulates the conscious mind in order to secure fulfillment of its sexual, aggressive, food, and territorial desires.

Numerous objects which are utilitarian in nature to the conscious mind connote sexual behavior, death, utopia, etc. to the unconscious. According to subliminal advertising specialists, phallic and virginal symbols, artistically hidden, sell products. These symbols prod the prime mover, the unconscious, to favor and purchase merchandise saturated with sexual connotations.

Anything slightly longer than it is wide is seen as a phallic symbol whereas objects round or elliptical in shape are in the unconscious language representative of the vagina. The most common phallic vocabulary includes neckties, autos, arrows, pencils, keys, cigars, cigarettes, hockey sticks, candles, snakes, trees, cannons, bottles, etc. The virginal vocabulary is comprised of lips, eyes, eggs, olives, cherries, apples, oranges, faces surrounded by hair, drinking glasses, etc. (Key, 1973, 58).

The sexual union of these male and female symbols are likewise innumerable: keys inserted into locks, nuts being screwed onto bolts, drinking glasses being filled by a bottle, swizzle sticks in glasses, etc. A phallic symbol, a cigarette for example, indicates the availability for sex. A cigarette held in a vertical "up" position means the holder is ready for sex, a horizontal position means, "I'm warming up" for sex and a vertical "down position means, "I'm post-climax and satisfied."

Other representations are based on Jungian archetypes (1958) without explanation as to why a "contemporary unconscious" would have any knowledge of ancient symbolic terms. Implicitly it is assumed that all unconscious minds have a basic vocabulary.

Figure 1. Subliminal sex: phallic symbols include the bottle cap and the jutting swizzle stick, while the word "sex" glows dimly in the ice cubes.

Break out the
frosty bottle

GILBEYS
GIN

and keep your
tonics dry!
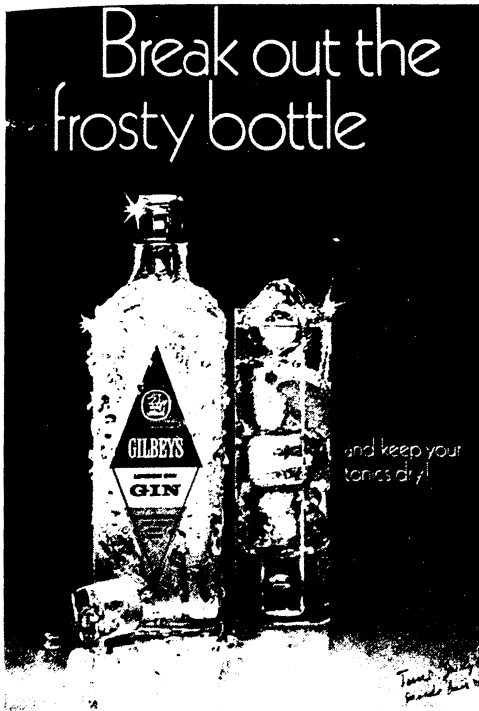
Volcanoes symbolize the genital origin of life and fertility, mice speak of the devil, wolves are symbols of evil, lizards of distrust, birds are carriers of human souls to paradise, scissors and other "V" shaped objects of castration, and an orange being peeled is archetypal of a female being seductively undressed. Varieties of obscene acts are hidden in ice cubes--different strokes for different unconscious preferences: oral, anal, genital, heterosexual, homosexual, etc. In the ad game, symbols in this lengthy dictionary are combined in seductive configurations in ad copy to go unattended by the conscious but strike the cords of the unconscious which knows the language and responds to the message.

CONCLUSION: THE UNCONSCIOUS AS FOLKLORE. Human societies could hardly exist without some conventional wisdoms or vocabularies of motives about how and why people act the way they do. Because we are condemned, so to speak, to a world of meanings, such conceptions become part of the folklore of any society. It seems to us that unconscious mental processes seen as triggers to overt action have become the prevailing folklore of industrial man in the post-Freudian age. Coupled with some ideas of motivation drawn from behavioral psychology, subliminal advertising uses this folklore to justify their business of selling advertisements. However, this brand of advertising has never, to our knowledge, been demonstrated to cause people to buy products.

Different mythologies are needed to deal with different classes of events. Modern meteorology is the prevailing mythology used to "explain" rain, and modern psychology with both its Freudian and Skinnerian versions is the current folklore being pressed into service to "explain" human behavior. As sociology, this contention is designed not to diminish psychology or meteorology, but to elevate the significance of folklore. At the same time, because sociology deals with materials that are essentially moral, questions can and must be asked about the nature of our folklore.

The final irony may be that businesses which purchase subliminal advertising copy in order to manipulate the consumer may themselves be manipulated by advertising agencies, at least to the extent that they believe that subliminal seduction really works. Agencies have cooled out their marks with rhetoric that resembles the classic sting: if you can't see our hidden persuaders, it's because they are effectively hidden.

The rise of social science in modern society has not occurred in isolation. Its rhetoric, findings, conclusions, and implications are becoming part of the fabric of everyday life. It is not surprising that an idea as complex and even doctrinaire as the unconscious will have social uses. But among the thousands of motives offered to explain social behavior, subliminal advertising--the mental masseuse--has to be one of the most

ingenious rhetorics ever adapted from the academic community to serve the interests of industrial society.

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