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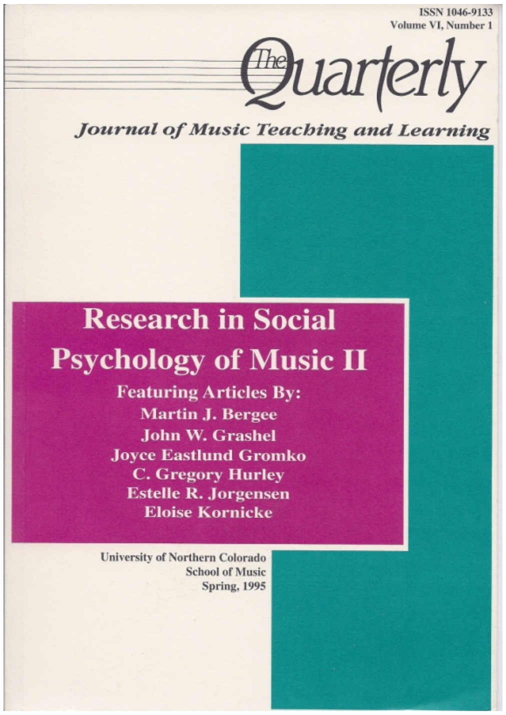

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An Analysis Of Type IV Musical Instruction In a Teacher-Student Dyad

By Estelle R. Jorgensen
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In a short paper published in 1981, I proposed four instructional types defined by the presence (+) and absence (-) of choice on the part of teacher and student, respectively: Type I (++), Type II (+-), Type III (-+), and Type IV (- -) (Jorgensen, 1981). I suggested that each type might be characterized by significantly different qualitative and quantitative conditions of teaching and learning, and some might be more effective than others in specific situations. This speculative model, based on my intuitive observations of music teaching in a variety of situations and a consideration of logical teacher-student choice possibilities, did not take into account either quantitative or qualitative aspects of choice, that is, the amount or degree of choice or the particular respects in which teacher and student can choose. Such aspects need to be explained if choice is to be considered a valid basis for categorizing instructional types.

> In this article, I shall focus on Type IV instruction in the context of a teacher-student dyad. ...one in which we imagine that the teacher cannot choose the student, nor can the student choose the teacher.

One of the difficulties social psychology theoreticians face in building models that can be tested empirically is how to analyze open and closed social systems. In searching for a way to model the four types of instruction I had proposed, musical or otherwise, I returned to the field of microeconomics, wondering if this might provide some clues as to how to go about modelling behavior in dyads and triads — the simplest interactive or instructional units. In the course of an extensive literature search, I encountered McKenzie and Staaf's (1974) microeconomic analysis of the United States' university education. Their assumptions of faculty academic freedom and student sovereignty, particularly in the delivery and choice of university courses, paralleled some of the assumptions underlying my Type I instruction concerning teacher and student choice. Using classical microeconomic models, they applied similar assumptions to an analysis of university instruction, and set about modelling: various cases of teacher and student preferences and expectations; the relationship between student effort and achievement; teacher effort and student achievement; the impact of technology on instruction; and a comparison of teacher and student behavior in instructional

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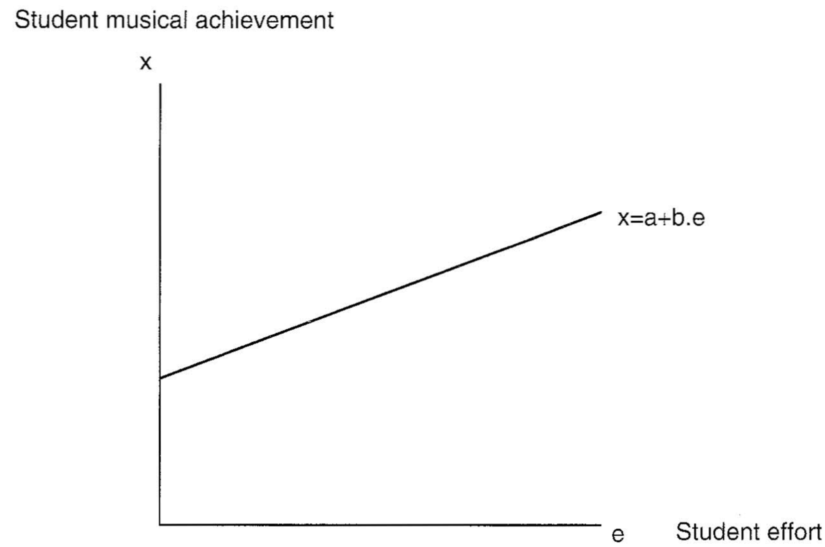
Figure 1

A student musical achievement function



triads (involving a teacher and two students) as opposed to dyads (involving a teacher and student), among other aspects.

In this article, I shall focus on Type IV instruction in the context of a teacher-student dyad. This presents an opposite scenario to that McKenzie and Staaf project, one in which we imagine that the teacher cannot choose the student, nor can the student choose the teacher. While I cannot address qualitative and quantitative aspects of choice systematically, this analysis suggests future directions for a more systematic analysis. Moreover, it indicates the kinds of questions theoretical models raise for empirical research (and the impact, in turn, of empirical results in shaping the assumptions made.) Look upon this exercise as a test of economic modelling techniques applied to the analysis of music instruction. Rather than systematically examining Type IV musical instruction, after a brief sketch of some underlying assumptions, I shall focus on four cases limited to a teacher-student dyad, and conclude with some questions that merit further empirical and theoretical research.[1]

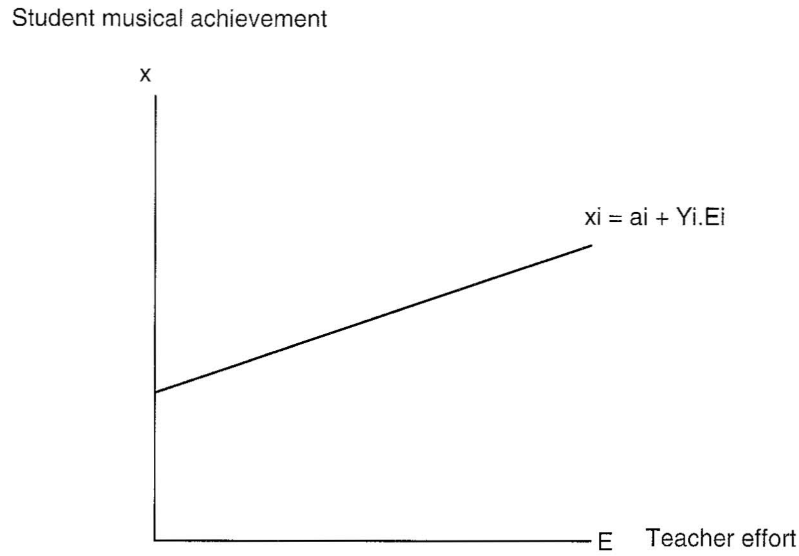
Type IV Assumptions

I shall assume a closed system in which we can predict at least some of the relevant variables with certainty. Such a system represents a kind of ideal world unrelated to the reality of fuzzy categorizations and imperfect knowledge. This system, however, permits us to progressively relax stringent assumptions and study the effect of each separately. (Again, this is a problematical assertion, especially since particular physical, psychological, and social events are often closely interrelated with others.) Clarifying our conceptions of things, even if this constitutes a sort of empirical unreality, may assist in undertaking the study of events in the world about us that are difficult to understand and classify.

In addition, I shall assume that even though teachers and students have perfect knowledge of the available pool of students and teachers, their expectations of each other may not be accurate, and that each does not have perfect foresight of the other. Thus, while their preferences are constant at any given time, these may change during the period of instruction. Rather than model these changes processually, I shall use a comparative statics approach, comparing situations at times t1 and t2, respectively. Teacher-student time constraints are operative, represented as:

Figure 2

A musical instruction function



t = e + l. . . . . (1)

where a given time period (t) is expended on all aspects of musical instruction (e) and alternative activities (l). As such, time is an index of teacher and student effort directed either to musical instruction or outside it. Following McKenzie and Staaf (pp. 9, 41) I also presume that the willingness of both teacher and student to devote effort (time) to musical instruction and to forego other alternative desirable activities is equal to their ability to do so.

Assuming that musical instruction is considered a desirable "normal good" in which more rather than less of it is desired, and that time expended on other alternative activities is also a normal good with marginal utilities (i.e., the satisfaction afforded by the last additional unit of a particular thing, represented (Ue > 0; Ul > 0), the student's capacity for musical achievement, or *Student Musical Achievement Function* (SMAF), is denoted:

x = a + b.e . . . .(2)

In the foregoing formula (a) represents the "stock" of musical knowledge a student possesses before instruction begins, the constant (b) represents a vector of factors affecting the student's ability to translate effort (or time) into musical achievement, including the student's musical aptitude, conceived for the purpose of this analysis as a rate of improvement in musical achievement, and (e) represents student effort, or the amount of time the student devotes to musical instruction. See Figure 1.

Likewise, assuming a given ith instructional dyad in which teacher ability (Bi), technology (i.e., instructional methods as well as computers and other technological aids) used by the teacher (Ti), and teacher effort (Ei) affects student musical achievement, then the *Musical Instruction Function* (MIF) for the ith instructional dyad is written:

xi = ai + (bi.ei.Bi.Ti).Ei . . . . (3)

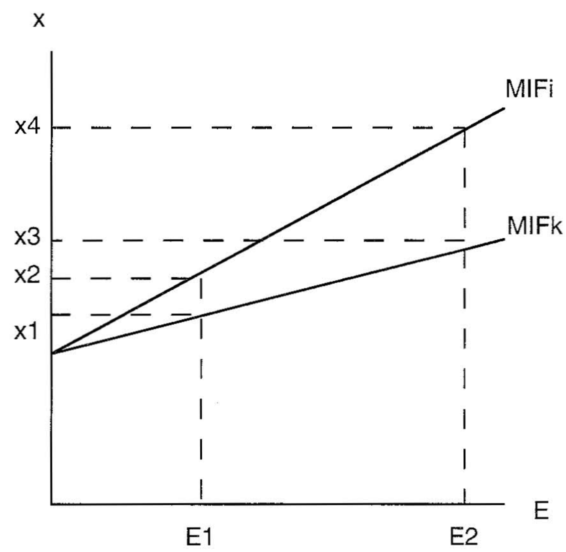
where lower case letters apply to the student and upper case letters to the teacher. Substituting the constant Yi for (bi.ei.Bi.Ti), which represents a vector of factors affecting the teacher's ability to translate effort (or time) into student musical achievement (including student musical aptitude, student effort, teacher ability, and technology used in the instructional process) allows us to write:

xi = ai + Yi.Ei. . . . . (4)

Thus, the Student Musical Achievement Function is modified by the impact of teacher ability, technology and effort, and the Musical Instruction Function, specific to the ith

Figure 3

Teacher effect on student musical achievement



instructional dyad, results from teacher-student interaction. See Figure 2.

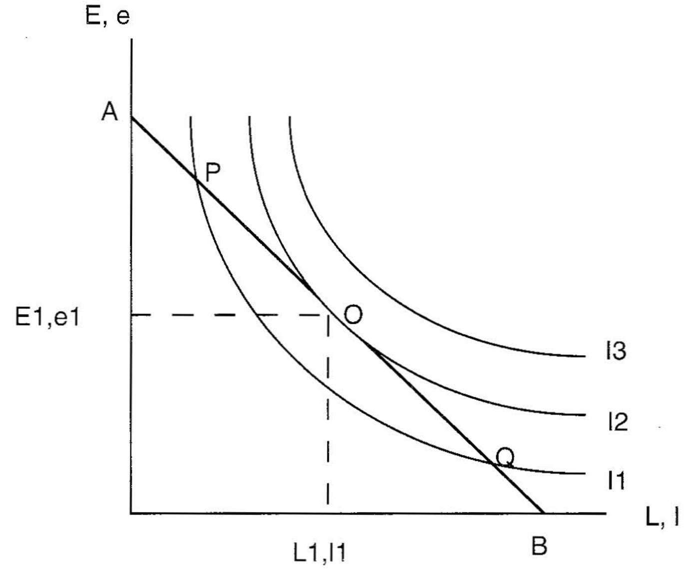
Here, we encounter an empirical problem. Should b and Yi be assumed to be constants or multipliers? McKenzie and Staaf (1974, p. 8) assume them to be constants, based on the "S-shaped learning curves" they find to be evident in the psychological literature. I have wondered, however, if b and Yi might not be multipliers, at least in part of their range, especially if there is progressive efficiency in musical achievement as successive increments of student and teacher effort generate increasing increments of musical achievements. While the assumption of a constant is not unreasonable, and presents us with a simple case, it would be interesting to determine empirically the status of b and Yi as constants or multipliers.

The teacher effect on student musical achievement is evident in Figure 3. Take, for example, two hypothetical musical instruction functions for the ith and kth instructional dyad, given to students of identical musical aptitude where MIFi > MIFk. Compare two units of teacher effort, E1 and E2 where E2 > E1. It is clear that there is less disparity between x1 and x2 than between x3 and x4, leading us to conclude that the greater the teacher effort, the more noticeable the effect (either positive or negative) on student musical achievement.

Now, when teacher and student exercise choice in Type I instructional situations, they may maximize their utility. McKenzie and Staaf (p. 10) depict the problem of utility maximization for teachers and students as that in Figure 4. This model is based on their axioms of "comparability," "transitivity," and "dominance," together with those guaranteeing convexity of teacher-student indifference curves ("completeness, transivity, dominance, increasing personal rate of substitution and continuity of substitution") (p. 6) — assumptions also common to classical economic decision-making. To explain, students and teachers can compare one thing to another, adopt a variety of hypothetical and actual positions in respect of one thing and another, and prefer more of a thing to less. An indifference curve maps successive bundles of one thing and another between which the individual is indifferent, and would settle on any point along the curve, if this were possible. The curve is shown as convex, primarily because as one moves in one direction or the other along the curve, the loss of one unit of one thing must be

Figure 4

Teacher–student utility maximization problem in Type I instruction



compensated by more of the other thing. This is because the individual prefers more of that other thing than less, and is willing to substitute it for the other. The indifference curve is personal and subjective in that it maps hypothetical personal desires that may or may not be attainable. In Figure 4, I3 > I2 >I1 such that I3 holds a potentially higher degree of satisfaction for the individual than either I2 or I1, respectively.

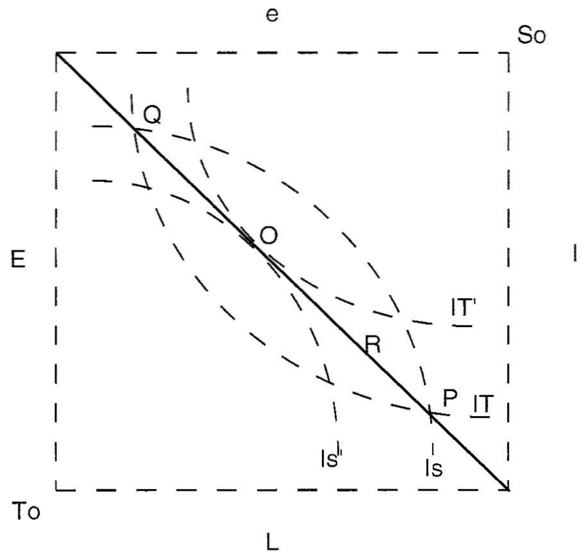
Assuming the unlikely (but nevertheless easy) case of identical teacher and student preference maps, AB represents their *attainable set,* or ability rate of substitution between time devoted to musical instruction (E, e) and time devoted to alternative desirable activities (L, 1). Given three indifference curves, I1, I2, I3, with teacher and student utility (or satisfaction) optimized at O, i.e., E1, e1, and L1,l1, respectively, I3 would be more desirable but is unattainable, and either P or Q leave the teacher and student on a lower indifference curve I1. The teacher and student will then act rationally to elect a utility solution at O.

In Type IV, however, neither teacher nor student may exercise choice. The teacher in the ith dyad cannot choose the student, determine when the instruction will commence or terminate, or select the technology to be employed (e.g., ai, bi, or Ti). Both teacher and student are "locked into" the dyad. Decisions respecting the expectations of student musical achievement are made by an external jurisdiction. What the student and teacher can control, however, is the level of effort they expend (Ei and ei, respectively). Given that the teacher and student may not exercise choice, it follows that their optimal values for bi and Yi in the student musical achievement and musical instruction functions, respectively, are impossible, except by chance. In all probability, optimal solutions are unlikely to be reached.

To some extent, a teacher's preference map parallels that of the jurisdiction for whom he or she works. The notion of a jurisdiction is problematical, given the usual case of the teacher as an employee of a school district or a university. What of a private music teacher? Here, constraints result from the expectations of professional associations (e.g., musicians' unions, musical societies), government regulations, and commercial interests. Whatever the precise notion of jurisdiction, there is a margin or zone of *tolerance* in which a certain degree of incompatibility in teacher-jurisdiction or teacher-stu-

Figure 5

Identical teacher–student expectations and preferences



dent expectations and preferences is tolerated. This will doubtless be affected by such things as the relative demand and supply of teaching positions, the degree to which teacher and administration musical and ethical values intersect, and the relative demand and supply of students and teachers. It is important, however, to separate teacher and jurisdictional preferences, as differences are clearly evident when teacher or jurisdictional zones of tolerance are exceeded.

Cases of Type IV Instruction

I shall describe four cases illustrating the operation of Type IV instruction, starting with the simplest and moving to more complex cases.

A. "Identical teacher-student expectations and preferences"

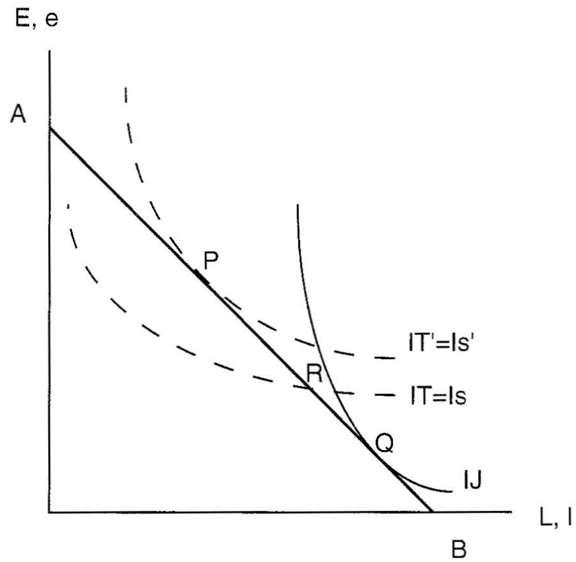
In Figure 5, a teacher preference map is superimposed on a student preference map so that the origins are diagonally apposite from each other. Dotted lines indicate that neither teacher nor student may exercise choice in determining utility solutions. Assuming that the jurisdiction dictates a solution at O, teacher and student would be at equilibrium, there would be inertia to change, and the instructional process would be identical to Type I instruction under the same assumptions.

Let us assume, however, that the jurisdiction imposes a solution at Q, and that a movement from O to Q does not exceed the zone of tolerance of teacher and student. They will then cooperate with the jurisdiction, reaching a quasi-equilibrium at Q, from which they would both wish to move in the event of a jurisdictional change. If the jurisdictionally-imposed solution at Q exceeds the zone of tolerance of teacher and student, there may be two possibilities. In the first case, both may move to P, assuming that it is preferable to reduce effort in the musical instructional dyad, leaving time for alternative desirable activities. In the second case, teacher and student may collude to thwart the jurisdictionally-imposed solution by moving to a point approaching O, i.e., R, in which they would both be at relative equilibrium.

Presumably, collusion at R would be preferable to the jurisdiction than reduction in student and teacher effort at P. If movements to P or R were within the jurisdiction's zone of tolerance, the instructional dyad would remain intact. Suppose, however, teacher and student realize that a movement

Figure 6

Teacher–student collusion



to P lies outside the jurisdiction's zone of tolerance, where the jurisdiction would fire or cease affiliation with the teacher. If the movement to a point approaching O (i.e., R) is within the jurisdiction's zone of tolerance, the teacher and student may agree to collude at R in order to maintain the instructional dyad.

The decision to collude is a function of the relationship between teacher, student, and jurisdictional preferences and their respective zones of tolerance. This is shown in Figures 6 and 7. In Figure 6, AB represents the attainable set for student and teacher, and the jurisdiction's expectations are identical with the attainable set of teacher and student. Teacher and student have identical preferences, optimized at P, whereas jurisdictional preferences are optimized at Q. Assuming that a movement from P to Q exceeds teacher and student zones of tolerance, they may agree to collude at R.

However, what if the situation depicted in Figure 7 obtains? AB again represents the attainable set for student and teacher, and the jurisdiction's expectations are identical with this attainable set. In this case, however, teacher and student have different indifference curves (It, Is), the student's optimum point is at Q, and his or her zone of tolerance is exceeded by a jurisdictional solution at P (also an optimum point for the teacher). The student, therefore, moves from P to R, causing the teacher's zone of tolerance to be exceeded, and the teacher likewise moves to R (where less teacher effort need be expended in the instructional dyad). In this example, collusion does not take place. The net impact, however, is for less teacher and student effort (time) to be devoted to musical instruction than would otherwise have been the case.

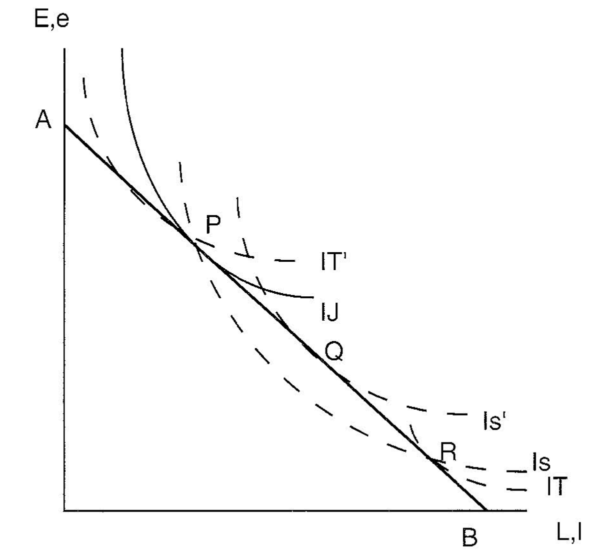
I conclude, therefore, that teacher and student will cooperate with the jurisdictional solution if it falls within their zone of tolerance. If this is not the case, they may collude if their preferences and expectations are more or less identical, such that the jurisdictional solution is thwarted. I assume that the solution of identical teacher-student expectations and preferences will approach the point of common utility maximization, i.e., R in figure 5, where R approaches O.

B. "Disparate teacher-student preferences and expectations"

In the case where teacher-student expectations are identical but preferences differ (see Figure 8), a teacher preference map is super-

Figure 7

Absence of teacher–student collusion



imposed on a student preference map (dotted lines indicating that neither teacher nor student exercises choice), with origins (To and So) diagonally apposite. The teacher's optimum point is at P, while the student prefers Q. If the jurisdictionally-imposed solution is at Q (implying identical expectations of teacher and student attainable sets), and if Q lies outside the teacher's zone of tolerance, the teacher will likely move to R. As the student's zone of tolerance is not exceeded by this movement, the student likewise drops effort to R. This decline in teacher and student effort is teacher-initiated.

Now consider the opposite case (Figure 9), in which the student's optimum point is at P, while the teacher's optimum is at Q. Assume that a jurisdictionally imposed solution at Q lies outside the student's zone of tolerance, so that the student initiates a movement to R, to which the teacher also responds as her or his zone of tolerance is exceeded. In this case, the decline in effort is student-initiated. Whether or not this decline in student and teacher effort is teacher-initiated (Figure 8) or student-initiated (Figure 9), we would not expect teacher-student collusion to take place (after Figure 7).

Relaxing the assumption of identical teacher-student expectations leads us to the case of disparate teacher-student expectations and preferences (see Figure 10). For the sake of argument, let us assume that the jurisdictionally-imposed solution favors the teacher, and exceeds the student's zone of tolerance. Different teacher-student expectations are shown by AB, representing the student's actual attainable set, and CD, representing the teacher's expectation of the student's attainable set. We will further assume that the jurisdiction is indifferent to solutions R and P. The teacher and student would prefer optimum points at P and Q, respectively.

But assume that a movement from Q to R exceeds the student's zone of tolerance and the student responds with a movement to U, expecting the teacher's response to be a movement to Z. Instead, the student's movement to U lowers the teacher's indifference level, and the teacher responds by a movement to G. This movement places the student, in turn, on a lower indifference cure at H. If the student moves to H, the teacher's response is to move to F. A spiral effect is thus created due to the fact that a student's actions at time (t) evoke a teacher response in (t+1). Neither can escape the spiral, and

Figure 8

Identical teacher–student expectations and different preferences when the teacher's zone of tolerance is exceeded

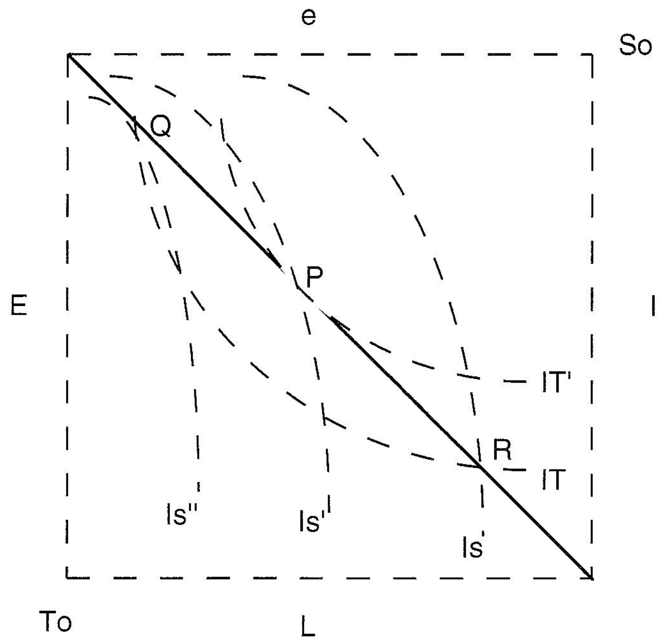


Figure 9

Identical teacher–student expectations and different preferences when the student's zone of tolerance is exceeded

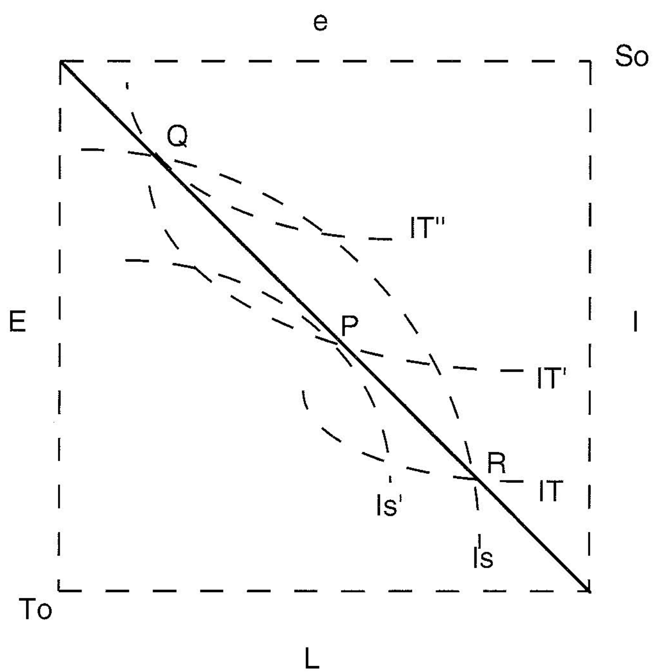
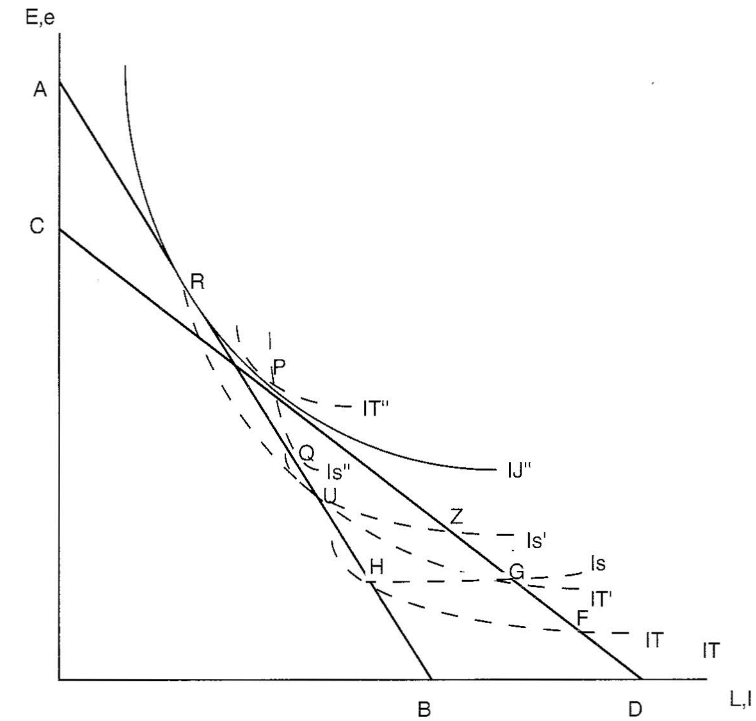


Figure 10

Spiral effect



the decline in effort level is greater than it might otherwise have been. We might also trace the reverse case, in which, if a teacher's zone of tolerance is exceeded, the teacher's actions will trigger responses in the student that will progressively reduce teacher and student effort, causing them to spiral down to a level greater than might otherwise have been the case.

I conclude that within the teacher-student zone of tolerance, a jurisdictionally-imposed solution under conditions of different teacher-student expectations and preferences will elicit cooperation from both teacher and student. Outside their respective zones of tolerance, however, the time lag between teacher and student action and reaction, respectively, will result in a spiral from which neither teacher nor student may escape by virtue of the absence of choice. This exacerbates the movement of teacher and student effort away from optimal levels.

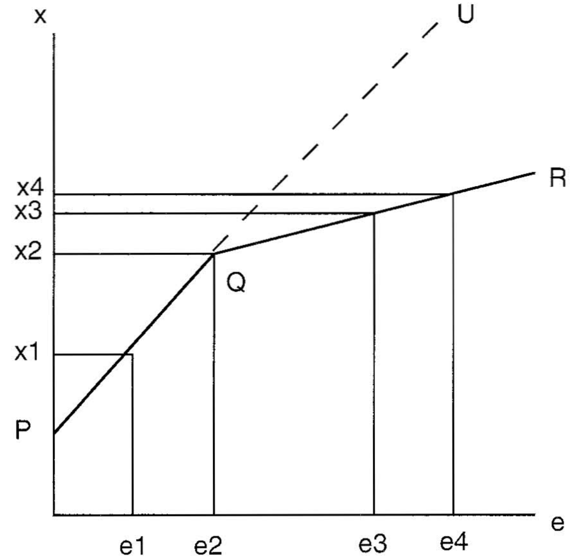
C. "Relationship between student effort and musical achievement"

In the absence of student choice, the student musical achievement function will take the same shape as in Type II instruction (see Figure 11). PQU represents the student musical achievement function under Type I conditions. Under Type II conditions, beyond the student's zone of tolerance at Q, student effort falls, lowering the coefficient, b, in the student musical achievement function, and correspondingly, the slope of the function, QR. This occurs because frustration or boredom due to exceeding the student's zone of tolerance causes the student to redirect musical activity in areas outside the instructional dyad, or to participate in other non-musical activities which are perceived as more enjoyable or inherently rewarding. (It is interesting to speculate on whether the presence or absence of choice is a factor affecting the size of the zone of tolerance; this is ultimately an empirical question that merits attention).

For the sake of this analysis, I assume two constant values for b, the greater represent-

Figure 11

Type IV student musical achievement



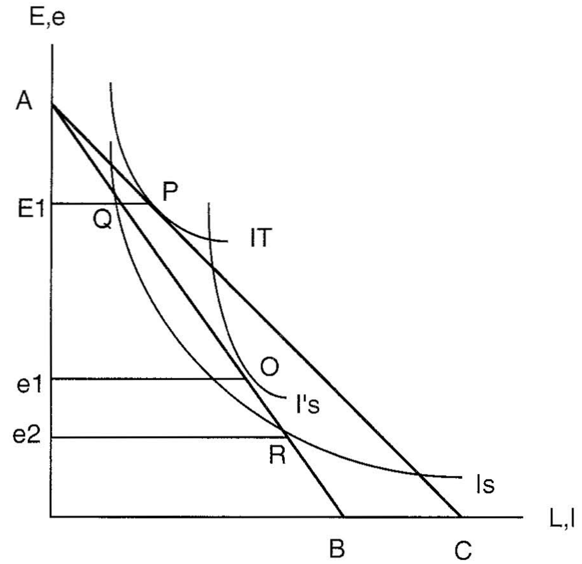
ing the student musical achievement function up to the margin of the student's zone of tolerance, PQ, and the lesser representing the student musical achievement function after the margin of the student's zone of tolerance has been exceeded (QR), resulting in a kinked student musical achievement function. The drop in the coefficient b in the range QR means that equivalent student effort thereafter, where e4 - e3 = e2 - e1, results in reduced student musical achievement, where x4 - x3 < x2 - x1.

This drop in student effort and lowering of coefficient in the student musical achievement function can be explained as follows. Whereas in Type I instruction, the student is motivated to cooperate with the teacher because he or she chose the teacher in the first place, no such choice is possible under Type IV instruction. The student has no choice in the selection of the teacher and cannot opt out of the instructional process, even if his or her zone of tolerance is exceeded.

The student's response under these circumstances is represented in Figure 12. If AB represents the student's attainment set, AC represents the teacher's expectations of the student's attainment set, and student indifference curves I's and Is. The teacher's expectations of the student's effort is represented at E1 with the teacher's utility maximized at P. The student may only reach Q by accepting a reduction in the indifference curve from optimum O. If the disparity between the teacher's expectation of student effort E1 and student's desired effort level e1 is so great as to exceed the student's zone of tolerance, the student's only recourse (unlike Type 1 instruction, where she or he could leave the teacher), is to reduce effort to e2, represented by the solution at R. It would then be the teacher's choice whether to compromise with the student and accept a lower indifference curve, or (if his or her zone of tolerance is exceeded) to urge the jurisdiction to expel the student. One could likewise trace an opposite situation where the teacher's expectation of student effort is significantly below that desired by the student, leading to student boredom and frustration, and a lower level of effort than the student would otherwise have been prepared to commit to the instructional dyad. (It would be interesting to answer the empirical question as to whether or not students in such situations tend mainly to direct their efforts outside the instructional dyad to musical or nonmusical activities.)

Figure 12

Student response when zone of tolerance is exceeded



For these reasons, therefore, the student musical achievement function tends to be kinked, and (except by chance), different from the optimal value. Moreover, the elasticity or slope of the function varies depending on: the relative supply of teachers and students; the relative demand for teacher services; the relative musical aptitudes and preferences of students; and the supply of alternative desirable activities, l, available to the student, among others.

The availability of a plethora of alternative musical or non-musical activities presently available to teachers and students may cause such student musical achievement functions to be more inelastic now than they may have been in the past, although this empirical question remains. Given that the student musical achievement function is kinked and not optimal (again, except by chance), student learning may be assumed to be less than optimal, especially at some parts of its range.

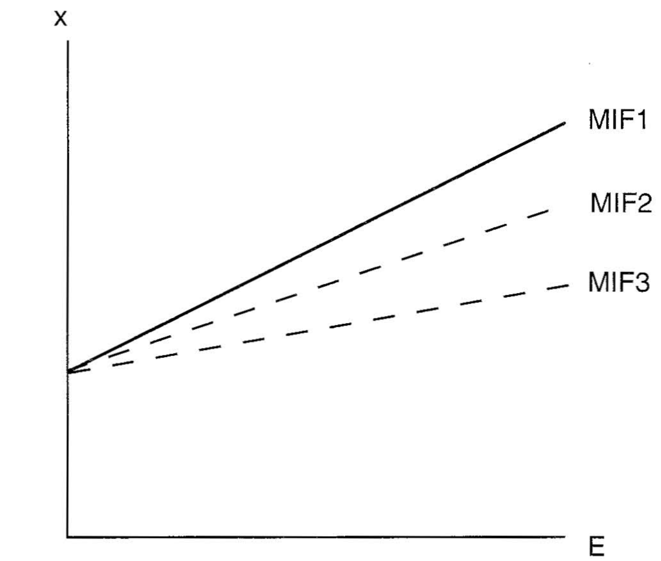
D. "Relationship between teacher effort and student musical achievement"

The absence of teacher choice compounds a less than optimal student musical achievement function to further reduce the music instruction function below its optimal level. In Figure 13, assuming optimal values for bi and Yi, MIF1 represents the optimal musical instruction function. If bi falls, in the absence of student choice, MIF2 represents a less-than-optimal musical instructional function. Additionally, if Yi falls, in the absence of teacher choice, the musical instruction function reduces even further to MIF3. Thus, if movements away from optimal values are in the same direction for both teacher and student, Type IV instruction is rendered more inefficient than either Types II or III instruction. If movements away from optimal values are not in the same direction, this disparity between Types I and IV may be reduced, and Type IV may be more or less efficient than Types II and III. While movements away from optimal student musical achievement and musical instruction functions may be compounded in Type IV instruction, particularly where the teacher and/or student zones of tolerance have been exceeded, empirical research is needed to determine what these likely outcomes will be, particularly with respect to learning efficiency and teaching effectiveness.

Under Type IV conditions, it is likely that a teacher supply of effort (time) such as that in Figure 14 obtains. Imagine three musical in-

Figure 13

Comparative efficiency of musical instruction functions



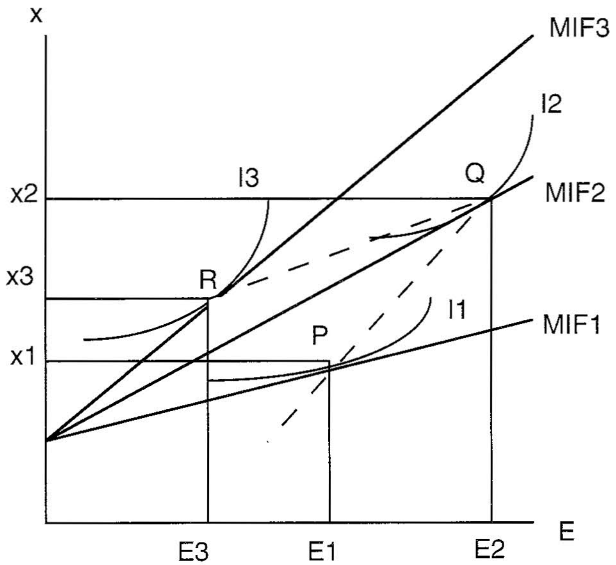
struction functions (where MIF3 > MIF2 > MIF1), representing three student and jurisdictional expectation levels of the teacher. The teacher is willing to expend additional effort to gain significantly higher student musical achievement between P and Q. Assume, though, that a movement from MIF2 to MIF3 is outside the teacher's zone of tolerance. The response produced would be a movement from Q to R, with a decline in teacher effort from E2 to E3, and corresponding student musical achievement from x2 to x3. Thus, the teacher supply-of-effort curve is forward-sloping for part of its range and backward- sloping when the teacher's zone of tolerance is exceeded. (It is ultimately an empirical question as to whether the teacher retreats back along PQ, or a decline in teacher effort results in an actual decline in student musical achievement, implying the PQR.)

The Type IV musical instruction function (depicted in Figure 15) takes two alternative shapes, depending on whether or not teacher and student collude. Let FG represent the musical instruction function within the teacher and student zone of tolerance. If the teacher or student zone of tolerance is exceeded at G, there are two possibilities: (1) in the absence of teacher-student collusion, the musical instruction function is FGH, where the segment GH represents the zone(s) of tolerance being exceeded; and (2) in the presence of collusion, the music instruction function becomes FGJ, where the dotted segment, GJ, may take a variety of slopes. It is not clear which is the more typical case — the kinked FGJ or the kinked forward-sloping FGH — and it remains for empirical research not only to test whether these two alternative shapes apply, but also to determine which is the more typical.

I assume, therefore, that without collusion, the music instruction function assumes that as teacher effort declines, student musical achievement declines correspondingly. With collusion, teacher effort and student musical achievement may continue to increase at a rate greater or lesser than that dictated by the jurisdiction, but within the zone of tolerance of both teacher and student. In the case of the segment GH, it is clear that teacher-student-jurisdictional conflict is increasingly evident, whereas in the segment GJ, only teacher-jurisdictional conflict is evident (the teacher and student having colluded to thwart the jurisdictional solution.)

Figure 14

Type IV teacher supply of effort (time)



Conclusion

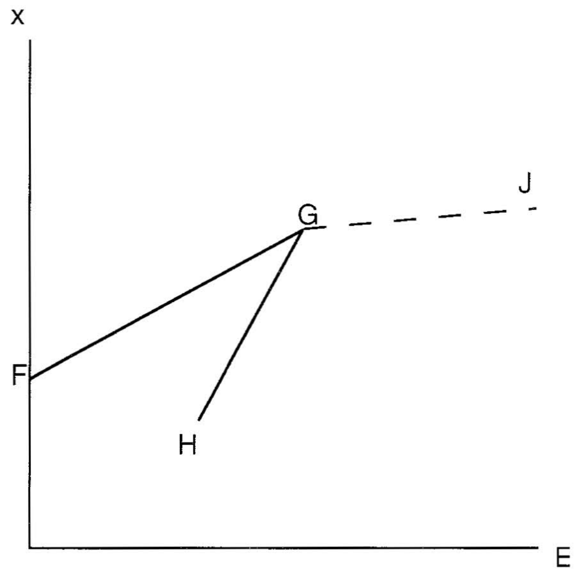
We have traced four cases of type IV musical instruction involving identical and disparate teacher-student expectations and preferences, respectively, and the relationships between student effort and musical achievement, and teacher effort and student musical achievement, respectively. Throughout, I have suggested empirical questions raised by this theoretical analysis. As such, the analysis provides a rigorous way of systematically asking questions about the relationships of the particular variables of teacher and student expectations, preferences, effort, and student musical achievement, thereby providing an assumptive framework that can be tested empirically.

The present analysis raises some important empirical questions. Do teachers and students act in the manner hypothesized? Do they act rationally? Do their indifference maps look like those predicted? Do they experience zones of tolerance in the manner hypothesized? If so, how do they act when these zones of tolerance are exceeded? Does the presence or absence of choice impact on the elasticity of teacher and student zones of tolerance? Are the teacher supply-of-effort curve and the musical instruction function kinked and forward-sloping as predicted? Is learning more or less efficient, and teaching more or less effective, under Type IV as opposed to Types I, II, and III musical instruction? To what extent do teacher preferences and expectations mirror those of the jurisdictions for which they work? Are the vectors b and Yi in the student musical achievement and musical instruction functions, respectively, constants or multipliers? When students feel frustrated, thwarted, or otherwise bored by musical instruction in a particular context, do they tend to seek musical experiences elsewhere, or abandon musical activities in favor of other non-musical pursuits?

Among the many theoretical questions left unaddressed are: What is the effect of technology and technological change (construed to include music instructional methods as well as technological aids such as computers) on Type IV instruction? What is the student's response to the teacher in Type IV instruction, and how is it affected by the absence of choice of the teacher? What is the teacher's response to the student in Type IV instruction? How is it affected by the absence of sovereignty over curriculum or choice of the student? How do instructional triads operate within the context of Type IV instruction?

Figure 15

Type IV musical instruction function in presence and absence of collusion



These questions can be addressed using similar modelling techniques, and remain to be answered in the future.[2]

The closed model and comparative statics approach employed in this analysis provides only one way to systematically examine social-psychological events in music. It is only as helpful, of course, as the validity of its underlying assumptions. Also, it fits neatly with experimental and quasi-experimental designs, ex post facto studies, and the like, where the researcher takes a snapshot, so to speak, of events at t1, compares another at t2, and infers what might have happened in the interim. An alternative, dynamic and processual analysis would fit more closely with qualitative, ethnographic, participant-observation types of procedures that attempt to follow events through time, much as a moving picture captures a living quality in the psychological and social events that are occurring.

In earlier essays (e.g., see Jorgensen 1979), I suggested that both approaches are helpful in enriching the study of psychological and social events in music and music instruction. Just as there is a difference in what is captured between a snapshot and a moving picture, so a comparative statics approach yields a different outcome than a processual approach. One is not necessarily better than the other; rather, they yield different perspectives, raise different questions, and broaden our understanding of the nature of these events.

Beyond this observation, however, researchers need to be careful to match the models they use with related empirical research. As I have noted, comparative statics models are particularly useful in experimental and behaviorist research, whereas dynamic processual models seem more fitted to phenomenological and qualitative research. Seeing that the study of problems in social psychology of music includes the use of experimental, quasi-experimental, and quantitative descriptive procedures, researchers in this field need to develop rigorous comparative statics models. The one I have presented provides an example of the sorts of things that might be constructed.

Notes

1. This paper was read at the Indiana Symposium on the Social Psychology of Music, Indiana University, Bloomington, May, 1993.

2. A sketch of aspects of Type IV music instructional triads is found in Estelle R. Jorgensen, "Modelling Aspects of Type IV Music Instruction Triads," *Bulletin of the Council for Research in Music Education*, in press.

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